DOCUMENT RESUME

ED 320 226 EA 021 861

AUTHOR	Press, Harold L.
TITLE	Toward 2000. Trends Report II: Elementary-Secondary Projections.
INSTITUTION	Newfoundland and Labrador Dept. of Education.
PUB DATE	Jan 90
NOTE	137p.; Prepared by the Program Evaluation, Research, and Planning Section, Division of Evaluation and Research.
PUB TYPE	Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)
EDRS PRICE	MF01/PC06 Plus Postage.
DESCRIPTORS	Declining Enrollment; *Demography; Educational Demand; Educational Supply; *Educational Trends; Elementary Secondary Education; Employment Projections; Enrollment Influences; Enrollment Projections; Foreign Countries; *Futures (of Society); Population Growth; Population Trends; *Teacher Employment; Teacher Recruitment; Teacher Shortage; *Teacher Supply and Demand
IDENTIFIERS	*Labrador; *Newfoundland

ABSTRACT

Comprehensive, systematic planning provides the overall direction for education through the development of policies and objectives. An understanding of demographic, social, and economic trends is necessary for educators to make decisions for the future. The 1986 demographic forecasts for the province of Newfoundland are updated in this report, which focuses on the changing character of the teacher work force, the current status of teacher supply, and the future demand for teachers. Population and enrollment trends of the last 20 years are analyzed to make education projections. Demographic and economic trends suggest that the province will experience a period of contraction in education in the 1990s. Although a decline in population will accompany a decline in the teacher work force, the likely outcome is a general teacher surplus with a marginal shortage in some areas. Viewing teacher supply and demand as a single entity is therefore counterproductive. Recommendations are offered for coping with problems associated with the aging of the teacher work force. The report contains 32 tables and 16 figures based on the Department of Education's computerized databases. Appendices describe the general methodologies employed in the study as well as the survey instruments used to assess demand for various teaching and administrative positions and to measure teacher hirings and vacancies. (LMI)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

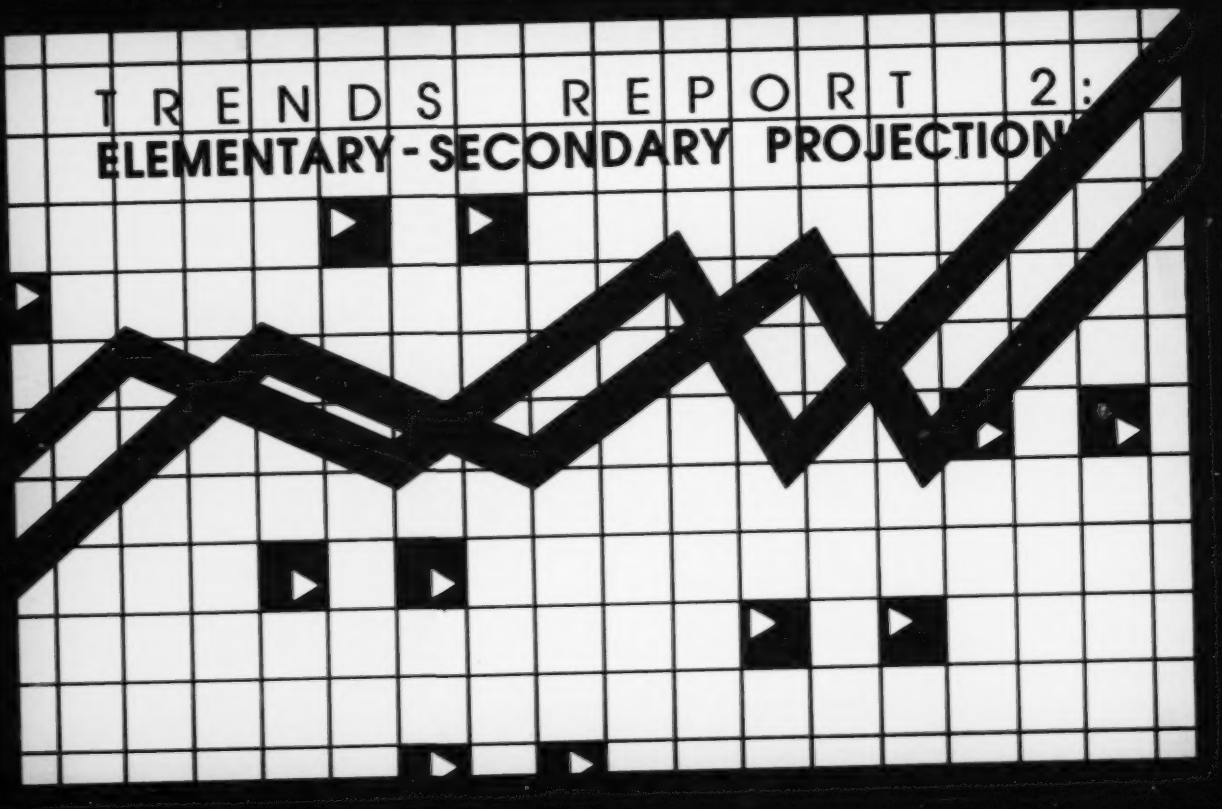
"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

B. Bradshaw

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

ED320226

TRENDS REPORT 2: ELEMENTARY-SECONDARY PROJECTIONS



EA 021 861

BEST COPY AVAILABLE

Newfoundland and Labrador
Department of Education
Hon. P. J. Warren
Minister

Dr. G. K. Winter
Deputy Minister

Dr. B. T. Fradsham
Assistant Deputy Minister
(Educational Operations)

Dr. L. Perry Fagan
Director
Evaluation & Research

January, 1990

EA

Toward 2000

Trends Report II: Elementary-Secondary Projections

Harold L. Press

Program Evaluation, Research & Planning Section
Division of Evaluation & Research
Department of Education
Newfoundland and Labrador

Acknowledgements

Toward 2000 was prepared by the Program Evaluation, Research and Planning Section, Division of Evaluation and Research. The study is the joint effort of the research staff, namely: Helen Banfield, Kerry Pope, Jill Andrews and John Humber.

Professor Jeffrey Bulcock, Faculty of Education, Memorial University of Newfoundland and Channing Fellow for 1989-90, provided guidance, direction and counsel. His analyses and judgements were without equal and his participation in this study is acknowledged and appreciated.

Edward Mackey and Carla Woodworth-Lynas assisted with the editing of the final report and provided valuable clarification on a number of issues.

Highlights

The following conditions are projected to unfold by the year 2000:

- *Births will decrease to fewer than 6,000 per year.*
- *Kindergarten enrolments will decrease to fewer than 7,000 per year.*
- *The total enrolment will drop to 100,000 students.*
- *Primary and elementary enrolment will drop a further 22 percent.*
- *High school enrolment will decline 24 percent from its current level.*
- *Special education enrolment will begin declining for the first time and drop 21 percent.*
- *The greatest losses will occur in central, southern and western areas of the province.*
- *The eastern Avalon and Labrador regions will experience only marginal losses in numbers of students.*
- *The teacher workforce will drop to fewer than 7,000 teachers.*
- *The average age of teachers will be 43.5 years.*
- *Most teacher demand will likely be filled by teachers already in the workforce.*
- *Demand in most subject/specialty areas and for classroom teaching will likely decrease.*
- *Demand for French teachers will remain vigorous for the next five to seven years.*
- *Retirements will continue to rise each year until the year 2003.*
- *The number of individuals choosing teaching as a career will likely remain high.*
- *The number of teachers moving to other provinces to enter the teaching profession will likely rise.*

Preface

The Department of Education places a high priority on comprehensive and systemic planning. Planning provides the overall direction for education through the development of broad policies and objectives. An appreciation, therefore, of the direction of demographic, social, and economic trends affecting education is essential if educators are to formulate plans, develop policies and make decisions for the future.

Against this background the need exists for detailed information on education trends for the coming decade. This paper is the second in a series of studies intended to provide such information. It updates the demographic forecasts published in 1986 and provides detailed projections for school districts. It also focuses on the changing characteristics of the teacher workforce, the current status of teacher supply, and the future demand for new teachers.

Unless otherwise stated, the following conditions apply throughout. All tables and figures are for Newfoundland. The sources of all data presented in the tables and figures are the computerized databases of the Department of Education.

Where possible, historical data are presented for a twenty year period. Each of the years beginning 1983-84 are used to depict the most recent trends. Of particular significance is 1983-84 the year in which grade 12 was introduced in the province. The years 1968-69, 1973-74 and 1978-79 are used to illustrate long-term trends. In total, the reader is presented with a time capsule of the previous twenty years.

If additional information is required on these or other topics, readers are advised to contact the following:

Department of Education
Division of Evaluation and Research
Program Evaluation, Research and Planning Section
Confederation Complex, West Block
P.O. Box 8700
St. John's, Newfoundland
A1B 4J6.

Table of Contents

Acknowledgements ii
Highlights iii
Preface v
Table of Contents vii
List of Tables ix
List of Figures xi

I. **INTRODUCTION** 1

II. **POPULATION AND ENROLMENT CONSIDERATIONS** 5
Demographic Indicators 5
Migration 19
Enrolment Patterns 24

III. **DYNAMICS OF THE TEACHER WORKFORCE** 29
Changing Characteristics 29
Inputs 35
Flows 39
Outputs 43
Retirement 47
Other Considerations 51
Substitute Teaching 51
Policy 54
Summary 56

IV. **A VIEW TO 2000: Education projections** 57
Student Enrolment 57
Personnel 70
Outputs 79
Demand 82
Geographic Demand 84
Subject/specialty Demand 86
Supply 91
Recruitment 93
Teacher Training 94
Certification 100
Summary 101

V. **SHORTAGE OR SURPLUS: What the future holds** 103
Summary 103
Conclusions 105

Bibliography 107
APPENDIX A. General Methodologies 111
Enrolment 114
Personnel 115
APPENDIX B. Survey Instruments 119

List of Tables

Table		Page
1	Demographic Patterns, 1978 - 1988	7
2	Total Fertility Rates by Province, Selected Years	9
3	Projected Total Fertility Rates of Selected Countries 1988 - 2000	10
4	Female Labour Force Participation Rates in Canada and Newfoundland, Selected Years	12
5	Marriage Rates, Age at Marriage, and Divorce Rates for Canada and Newfoundland, Selected Years	13
6	Actual and Projected Births, Females (15-44) and Births per 100 Females, 1989 - 2000	16
7	Aging in Canada - Youth Population and Median Age by Province, 1966, 1976 & 1986	17
8	Interprovincial Migration for Newfoundland, 1978 - 1987	20
9	Total Mobility Rate and Out-migration Rate of Dependent Population by Province, 1988	22
10	Enrolments by Level, Selected Years	25
11	Enrolment Change by School District, 1986-87 to 1988-89	27
12	Average Age of Teachers by School District, 1987-88 to 1989-90	33
13	First-time Teachers by Age, 1985 - 1989	37
14	Previous Years Teachers Moving to Other Schools, Selected Years	41
15	Previous Years Teachers Moving to Other Schools by School District, 1988-89	42
16	Teacher Withdrawal and Withdrawal Rates for Newfoundland and Canada, Selected Years	44

17	Factors Associated with Teacher Withdrawal, Selected Years	45
18	Acquisitions and Acquisition Rates, Selected Years	47
19	General Characteristics of Retiring Teachers, 1981 - 1989	49
20	Pensioned Teachers by School District, 1986 - 1989	50
21	Absolute and Relative Measures of Substitute Teaching	53
22	Projected Enrolments by Level, 1990 - 2000	59
23	Projected Enrolment by School District, 1990 - 2000	62
24	Projected Teachers by School District, 1990 - 2000	72
25	Projected Withdrawals and Acquisitions, 1990 - 2000	82
26	Rankings of Subject/specialty Areas	87
27	Teacher Recruitment by Activity Previous Year, Selected Years	94
28	Full-time Enrolment in First and Second Year Programs and the Education Faculty, Memorial University, Selected Years	95
29	Full-time Education Students by Program, Memorial University 1980-81 to 1987-88	97
30	Graduation Statistics, Memorial University, Selected Years	98
31	Education Degrees Awarded by Type, Memorial University, 1984-85 to 1988-89	99
32	Teaching Certificates Issued, 1984-85 to 1988-89	100

List of Figures

Figure		Page
1	Population growth in Newfoundland, 1836 - 1989	6
2	Actual and projected births, 1957 - 2000	15
3	Proportion of population (5-19) above or below Canadian average by province, 1986	18
4	Enrolment change by province, 1986 to 1988	28
5	Median age of teachers, 1971 - 1988	31
6	The aging teacher workforce, 1972, 1980, 1989	32
7	Change in teacher workforce by province, 1986-87 to 1988-89	34
8	Extinction of the young teacher, 1972 - 1988	36
9	Source of new teachers, 1978 - 1984	39
10	Teacher allocations, actual and constant (1973)	55
11	Actual and projected enrolments, 1961 - 2000	60
12a	Projected decline in enrolment from 1989-90 to 2000-01, Integrated school districts, most likely scenario	68
12b	Projected decline in enrolment from 1989-90 to 2000-01, Roman Catholic school districts, most likely scenario	69
13	Actual and projected teachers, 1961 - 2000	71
14	The changing teacher workforce, 1972, 1989, 2000	78
15	Projected retirements, 1980 - 2015	80
16	Conceptual model of the main variables	112

I. Introduction

Three years ago, a report published by the Department of Education entitled *Trends in Education, Demographic Projections: Part I*, dealt specifically with demographic trends and the resultant impacts upon the educational system (1986). That report highlighted a general decline in enrolment while, at the same time, identifying several program areas which would continue to grow; namely, special education and French immersion. Four years later the projections appear to have been confirmed. By 1989-90, Kindergarten enrolment was projected to drop to 8,818 students whereas preliminary counts show 8,666 students enroled, a difference of 152 students or 1.7 percent. Further, the total enrolment was projected to drop to 129,965 students whereas the actual was 130,109 a difference of 145 students or 0.1 percent (Preliminary Statistics of Education, 1990).

By the middle of the next decade the *Trends Report* projected the student population would drop below 115,000 students. Is this trend likely to continue? What do these and other trends indicate? Will the student population in this province continue to decline in the face of a mini baby-boom throughout much of North America? Will the demand for teachers parallel the downturn in enrolment? Will new teachers be hired to meet the replacement needs of increased teacher retirements? Will a static and aging teacher workforce lead to a critical shortage of teachers? Will this province eventually face the same recruiting dilemmas encountered in Ontario and British Columbia?

The period of the sixties and seventies was an era of rapid expansion in education. Expanding economies throughout the western world contributed to considerable growth in

the resources and services provided to education. During that time, the United States Department of Commerce (1987) reported that the number of teachers in that country increased by 52 percent between 1960 and 1980, while Statistics Canada (1987) reported a 34 percent increase in the number of teachers in Canada and a sizable 94 percent increase in Newfoundland and Labrador.

By the 1980s, however, expansion of the educational system was limited to a few urban school districts. The demand for teachers, based on demographic expansion, had slowed significantly thus raising concerns about an aging, immobile and expensive teacher workforce. The impact of these changes was manifested in the swing from a chronic shortage of teachers to an apparent surplus. Crocker and Riggs (1979) summarized it this way:

> *It would appear that the policies on increasing teacher supply and teacher quality, implemented during the 1960s began to have their major impact just at the time when declining enrolments were beginning to bring about a substantial reduction in the demand for teachers. (p. 210)*

For the most part, studies of teacher supply and demand have focused on teacher shortages. Headlines advising of an immediate surplus of teachers draw little public attention, or for that matter the attention of educators. However, those that announce imminent, critical teacher shortages capture the imagination of many. For example, both *The Wall Street Journal* (Mackey-Smith, 1985) and *Time* ("And now, a teacher shortage," 1985) discussed the problem of increasing enrolments and their effects on the teacher workforce. In Canada, *The Globe and Mail* (Picard, February 21, 1989) headlined a story suggesting a shortage of 30,000 teachers. Quoting from the findings of a Canadian Teachers' Federation report entitled *Projections of Elementary and Secondary Enrolment and the Teaching Force in Canada 1987-88 to 2006-07* it stated:

> *Canada will need at least 30,000 new elementary and secondary school teachers by the turn of the century....The projected shortage of teachers is due to increased enrolment attributable to the "echo of the baby boom," the trend toward smaller classes and increased immigration.*
>
> *Education groups are warning that desperate school boards will conduct recruitment raids across the country, recruit foreign teachers and even lower standards to fill vacancies (p. A1)*

Even this province has not escaped. As recently as September, the *N.T.A. Bulletin* carried an article reporting the results of the Canadian Teachers' Federation study and providing evidence in support of a potential teacher shortage in the immediate future (Staple, 1989). The problem with making such predictions is that if correct they make an important contribution to education, but if wrong they can have adverse consequences for young people since some may decide to make a major investment in their future on the basis of false information.

In the past, the attention of educators has focused in large measure on declining enrolments, resource allocation, taxation, accountability, and public confidence. The supply of and demand for teachers, on the other hand, garnishes little visibility, but is vitally important to government agencies, teacher training institutions, university faculties, and employed, unemployed and prospective teachers. Few issues, for example, affect the prospective teacher as greatly as that of accessibility into the teaching profession, inasmuch as the ultimate goal is employment. The uncertainty of the job market, the need for both specialization and flexibility, the pressure for innovation, the necessity for mobility and the desire for career planning information are issues of critical importance to prospective teachers.

Important studies revealing important data on teacher demand and supply trends, forecasts and their determinants completed in recent years include those done in Illinois

(1981, 1983, 1985), Ontario (Lyon, 1975 and Smith, 1988), Alberta (1988); and by RAND (1984), the National Education Association (1983), and the National Center for Education Statistics (1987, 1988). Several studies were done in this province in the late seventies; namely, Stapleton, et al. (1978), Crocker and Riggs (1979), and Warren (1979).

The search for projection techniques, including the construction of powerful econometric models, must be tempered by a realistic appraisal of the availability of data. Such an inquiry must take into consideration the lack of essential data and, more importantly, the difficulty and expense of collecting even the most rudimentary information.

The purpose of this report is to provide a general framework for examination of the changing characteristics of the education system. It will describe key indicators dealing with enrolment, programs, teacher turnover, acquisitions and withdrawals, first-time teachers, subject and specialty demand, and more.

II. Population and Enrolment Considerations

The demand for teachers is a function of many variables: (1) enrolment trends, (2) teacher workforce characteristics, (3) prospective teacher characteristics, (4) policy initiatives, and (5) economic conditions. While this list cannot be viewed as exhaustive, neither can any one factor be viewed in independent isolation. For example, economic conditions can affect policy which, in turn, can determine the number and characteristics of new teachers hired. Nonetheless, teacher demand is influenced to a large degree by a complex set of demographic and educational characteristics of the student population - the provincial allocations of teachers being based on the number and characteristics of students (Newfoundland, Department of Education, 1970).

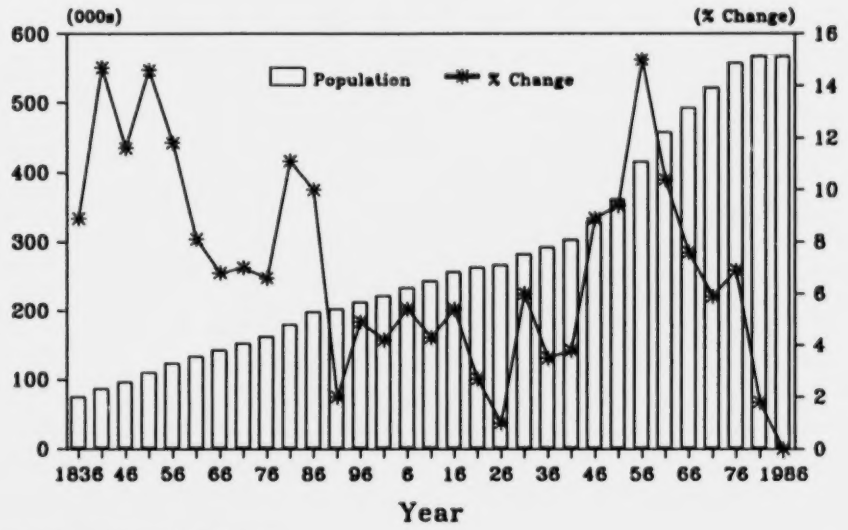
Demographic factors include births, fertility, labour force participation, age and migration while educational factors include student participation, student achievement, and policy initiatives. A brief review of the nature and extent of these factors is presented in order to place their effects on future enrolment into context.

Demographic Indicators

Throughout much of its recorded history, this province has had extremely high fertility. However, population change has come slowly. Figure 1, shows just how slowly it has grown since the 1836 census. The years prior to the start of the twentieth century showed uniform growth in the range 10% - 15% per five year period, while the

next 50 years showed much the same pattern but at a slower rate (2% - 5%). The post World War Two era, 1945 to 1976, saw the greatest growth in population even though the rate of change did not vary significantly. The last ten years have showed the least growth in this century with almost no change being recorded since the mid 1980s.

Figure 1
Population growth in Newfoundland, 1836 – 1986



Non-census years are estimates.

Enrolment patterns cannot begin to change until there are changes in either or both of two conditions - births and migration. Changes in the number of births provide the first clue to general population change. Yet, births by themselves can take from seven to twelve years before they significantly influence the enrolment - depending upon how large the increase/decrease is. The first evidence of change in the school system

shows up in primary enrolments and in individual school districts.

As outlined in Table 1, births have been declining for some time. Since the peak in 1961 (15,591) births have declined almost every year and are now estimated at 7,700 for the year 1988 (Newfoundland, Department of Health, 1988); a decline of 51.3% from

Table 1

Demographic Patterns, 1978 - 1988.

Year	Births	Kindergarten Enrolment[a]	Females 15-44	Total Fertility Rate	Kinder Enrol/ Births	Births/ 100 Females
	b	c	d	e	c/b	b/d*100
1988	7700[f]		142,900	1.51[g]		5.39
1987	7769		141,130	1.57		5.50
1986	8100		139,772	1.62		5.80
1985	8500		138,414	1.72		6.14
1984	8560	8755[h]	137,056	1.80	1.02	6.25
1983	8929	8959	135,698	1.84	1.00	6.58
1982	9173	9086	134,340	1.91	0.99	6.83
1981	9120	9338	131,934	2.01	1.02	6.91
1980	9332	9375	129,528	2.08	1.01	7.20
1979	9581	9902	127,122	2.07	1.03	7.54
1978	9525	9823	124,716	2.16	1.03	7.64

[a]Five years later.
[b]Department of Health, *Report on the Births, Marriages and Deaths*, 1987.
[c]Department of Education, *Education Statistics*, 1989.
[d]Statistics Canada, *Census of Canada* including Intercensal Estimates.
[e]Statistics Canada, *Demography Division, Special Series.*
[f]Newfoundland Statistics Agency, derived from Birth Notification System.
[g]Projection, Newfoundland Statistics Agency, 1989.
[h]Preliminary.

the peak. On the other hand, the female population (15-44) rose from 84,946 to 143,200 (68.6%) during the same period. Nonetheless, this rise was more than offset by the rate of decline in births as shown through total fertility rates and births per 100 females.

However, this is not a typical pattern for the rest of North America. Births have been increasing in the United States since 1978 and in Canada since the early 1980s. Even Quebec, which has had the lowest total fertility rates in the country, has had an increasing number of births since 1987. In fact, in 1988 births went up in every province in Canada with the exception of Newfoundland.

The question for this province becomes, will births continue to decline or will they begin to rise as they have throughout much of North America. The view that they will follow recent trends of other provinces and states, as has been suggested, seems unlikely given that in this province a number of factors (e.g. fertility, the size of the young adult population, labour force participation, migration, etc.) have been following largely different paths.

Unless there is a significant change in the attitude of society toward children and family size, the total fertility rate, a measure of the average number of children that would be born per woman[1], will not rise. As shown in Table 2, since 1966 the total fertility rate for the rest of Canada dropped from 2.81 to 1.66 in 1987 and appears to be stabilizing. In Newfoundland, however, the story is much different. At 4.58, the total fertility rate in 1966 was the highest among provinces yet by 1987 had dropped among the lowest (1.57). This is an incredible turn of events. Few could have predicted that fertility would drop with the speed it did. The Newfoundland Statistics Agency estimate the 1988 rate at 1.51 and project it to drop to 1.40 by the year 2000, giving it in all

probability one of the lowest fertility rates of any region in the world.

Table 2

Total Fertility Rates by Province, Selected Years.

Province	1966	1976	1986	1987	1988	2000
Nfld.	4.58	2.37	1.62	1.57	1.51	1.40
P.E.I.	3.58	2.14	1.84	1.86		
N.S.	3.15	1.88	1.62	1.60		
N.B.	3.31	2.07	1.59	1.56		
Que.	2.65	1.77	1.43	1.43		
Ont.	2.79	1.77	1.69	1.68		
Man.	2.94	2.01	1.89	1.88		
Sask.	3.28	2.30	2.09	2.05		
Alta.	3.07	2.04	1.93	1.89		
B.C.	2.66	1.72	1.72	1.72		
Canada	2.81	1.83	1.67	1.66	1.69	1.70

Sources: Statistics Canada, *Demography Division, Special Series*; Newfoundland Statistics Agency, derived from *Notification of Birth Database;* and U.S. Department of Commerce, *Statistical Abstract of the United States.*

Some idea of the nature of the decline is illustrated in Table 3. The United States Department of Commerce (1989), reported total fertility rates for 94 of the largest countries in the world. If one were to rank each country (and Newfoundland) by the magnitude of its total fertility rate, Newfoundland would rank 6th in the world in 1988 and rank 1st by the year 2000.

Few regions can survive for long when much of its primary resource, its people, is being lost without any means of sustaining itself, either from natural circumstances

(births), by economic means, or by political intervention (immigration). There is little doubt that a thorough examination of the implications of these changes, not only for education but for all public and private sectors, is critical.

Table 3

Projected Total Fertility Rates of Selected Countries, 1988 and 2000.

Country	Rank	1988	2000
West Germany	1	1.37	1.70
Hong Kong	2	1.40	1.70
Italy	3	1.46	1.70
Austria	4	1.51	1.70
Denmark	5	1.51	1.70
Netherlands	6	1.55	1.70
Switzerland	7	1.55	1.70
Belgium	8	1.58	1.70
Canada	9	1.69	1.70
Greece	10	1.69	1.70
Zambia	85	7.00	6.30
Uganda	86	7.02	6.32
Ethiopia	87	7.03	6.33
Tanzania	88	7.09	6.39
Iraq	89	7.14	5.50
Somalia	90	7.29	6.55
Malawi	91	7.68	6.79
Yeman	92	7.71	7.00
Kenya	93	7.88	6.86
Rwanda	94	8.49	7.65

Source: U.S. Department of Commerce, *Statistical Abstract of the United States, 1989*, Table 1405, p. 817-818.

There are few clues to indicate that fertility will change significantly in this century. While the most likely scenario is that it will continue to decline moderately and stabilize at or below 1.40, there is less evidence but some probability that fertility rates could either drop even further, or perhaps begin to rise as a new generation recognizes the need for society to grow and expand.

This downturn in fertility came as a result of progressive industrialization and urbanization and the values, ambitions and behaviour patterns which accompany such changes. Its causes can be attributed to a number of economic, demographic, social, psychological, environmental, and political factors. Two of the factors, economic and demographic, require brief explanation.

It has been generally recognized that economic factors play a major role in fertility decisions. Kasarda (1971) investigated the relationship between the economic structure of populations and their level of fertility. He showed how high female labour force participation rates depressed fertility levels. The availability of child care facilities, either institutionally or privately, the cost of living, the availability of work, the opportunities to pursue post-secondary programs were factors influencing the participation of women in the labour force and resultant fertility levels.[2]

As illustrated in Table 4, female labour force participation rates in Canada and Newfoundland have increased significantly over the last two decades. Between 1966 and 1988, the participation rate for Canada increased from 35.4% to 57.4%, a 62.1% rise, while for Newfoundland the rate, generally 12 percentage points lower than that for Canada, rose an incredible 101.3% from 22.5% to 45.3%. Given these trends, one can speculate that during the next few years over half the female population 15 and over will

be in the labour force.

Table 4

Female Labour Force Participation Rates for Canada and Newfoundland, Selected Years.

Year	Canada	Newfoundland
	%	%
1988	57.4	45.3
1986	55.3	42.9
1981	51.7	38.2
1976	45.2	31.8
1971	39.4	25.5
1966	35.4	22.5

Source: Statistics Canada, *Labour force annual averages 1975-1988*, 71-529.

Among the demographic forces contributing to a continued decline in fertility have been marriage rates, age at marriage, divorce rates, and size of young adult population (specifically females 15-44 years). Table 5 outlines the relative frequency in marriages and divorces since 1951. Marriage rates in Canada declined from a peak of 9.2 per thousand in 1951 to 7.3 in 1985. However, marriage rates in Newfoundland followed a somewhat different path. Having increased during the 1950s and 1960s to a peak of 9.0, they have since dropped to below 5.5 per thousand.

Kalbach and McVey (1971) assert the earlier the marriage the longer the exposure to the risk of pregnancy and, therefore, the higher the potential fertility levels. A drop

in the age at marriage during the 1950s and 1960s is believed to be a factor that raised fertility levels. However, since that time the average age at marriage (first) has been increasing and currently Canadians are, on average, in their late twenties when they get married and Newfoundlanders are slightly younger.

Table 5

Marriage Rates, Age at Marriage, and Divorce Rates for Canada and Newfoundland, Selected Years.

	Marriage Rate*		Average age at marriage		Divorce Rate*	
Year	Can	Nfld	Can	Nfld	Can	Nfld
1985	7.3	5.5	28.7	26.4	2.44	0.97
1981	7.8	6.6	27.5	25.5	2.78	1.00
1971	8.9	9.0	24.8	22.8	1.38	0.28
1961	7.0	7.2	24.7	22.8	0.36	0.01
1951	9.2	7.0	25.3	23.9	0.38	0.01

*Per thousand population.
Source: Statistics Canada, *Demography Division, Special Series,* various years.

Increasing divorce rates have negatively impacted fertility as well. While the rate for Newfoundland remains well below that for the rest of Canada, it has climbed significantly during the last decade.

One factor which has countervailed these forces has been the size of the young adult population; namely the female cohort 15-44. This *baby boom* generation of women

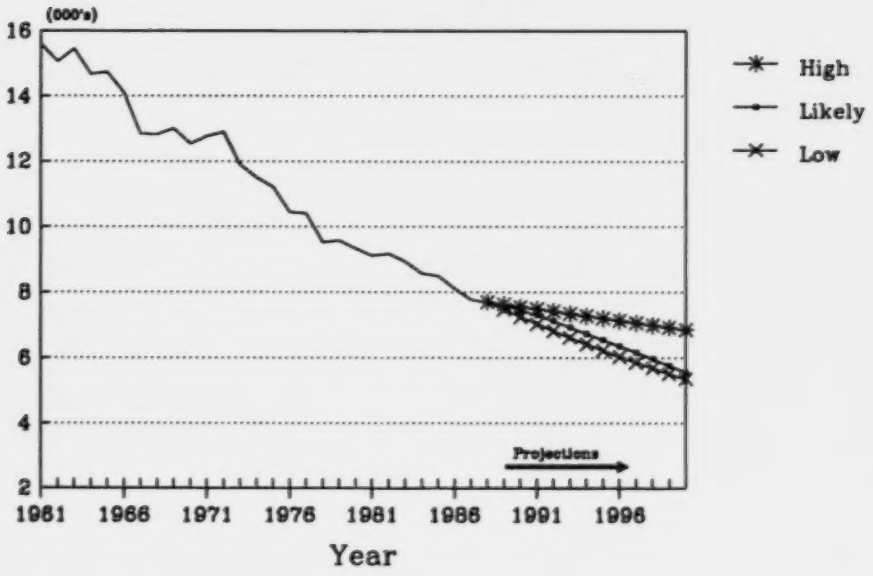
grew from 84,946 in 1961 to 139,772 in 1986; a significant 164.5 percent. Projections by the Newfoundland Statistics Agency (1988) show that this group will likely peak around 1990 at 144,000 and then decline. Much of the demographics of the past 20 years can be described as more women having fewer children. As rapid as this group has been growing fertility has been declining. However, now that fertility rates appear to be approaching some lower asymptote, and the female population (15-44) has reached its zenith and will fall victim to a lengthy arithmetic decline over the next several decades, it is highly probable that it will be well into the 21st century before births again begin to rise.

Given these assumptions and others, birth projections were developed using low, most likely, and high scenarios. The results are graphically displayed in Figure 2 and presented in Table 6. They indicate that, by the year 2000, births will drop to within a range extending from a low of 5,343 to a high of 6,853. The most-likely outcome is 5,600 or fewer births.

The adult population has been aging rapidly. Table 7, shows how the median age throughout Canada has increased over the last 20 years. In 1966 the median age in Newfoundland was an astounding 19.3 years in Newfoundland [that means half of the population was school age or younger] and postcensal estimates for 1989 show it has risen to 29.0 - three years below the Canadian average (32.0). Between 1966 and 1986, the median age for all provinces combined increased from 25.4 to 31.6, an increase of 6.2 years, while in Newfoundland it increased 8.6 years, behind only Quebec at 8.9 years. This rather swift aging in Newfoundland came about after a sharp rise in post-war births, thus creating a young population base followed, since the early 1960s, by a

significant decline in fertility.

Figure 2
Actual and projected births
1961 – 2000



The proportion of the population under the age of 18, for example, has consistently been 25% higher than that for Canada. Newfoundland declined from a remarkable proportion of 47.3% in 1966 to 32.1% in 1986. Postcensal estimates for 1989 provide evidence that the proportion for Canada is stabilizing (26.0%), yet for Newfoundland is continuing to decline (30.4%). It is likely the proportion for Newfoundland will eventually drop to and then parallel the all province average.

Table 6

Actual and Projected Births, Females (15-44) and Births per 100 Females, 1984 - 2000.

Year	Actual Births	Females 15-44	Births/ 100 Females	Birth Projections		
				Low	Most-Likely	High
	[a]	[b]	[c]	[d]	[e]	[f]
1984	8560	137,056	6.25			
1985	8500	138,414	6.14			
1986	8100	139,772	5.80			
1987	7769	141,130	5.50			
1988	7700[g]	142,900	5.39			
1989		144,000	5.28	7469	7603	7629
1990		144,500	5.16	7245	7456	7559
1991		144,300	5.06	7028	7302	7488
1992		143,900	4.95	6817	7123	7418
1993		143,500	4.83	6612	6931	7347
1994		142,600	4.72	6414	6731	7277
1995		141,900	4.61	6221	6542	7206
1996		141,100	4.50	6025	6350	7135
1997		140,300	4.39	5854	6159	7065
1998		139,300	4.28	5678	5962	6994
1999		137,900	4.17	5508	5750	6924
2000		136,600	4.06	5343	5546	6853

[a]Department of Health, *Notification of Birth Database,* 1989.
[b]Derived from Newfoundland Statistics Agency, *Population Projections, 1986 to 2006,* 1988, most-likely scenario.
[c]Linear exponential smoothing, alpha=0.997, MAPE=0.0391.
[d]Assumes arithmetic decline of 3.0 percent per year.
[e]Measure of the projected number of females (15-44) per projected birth\100 female rate, *(b*c)/100.*
[f]Linear exponential smoothing, alpha=0.997, MAPE=0.0389.
[g]Preliminary.

Table 7

Aging in Canada - Youth Population and Median Age by Province, 1966, 1976 & 1986.

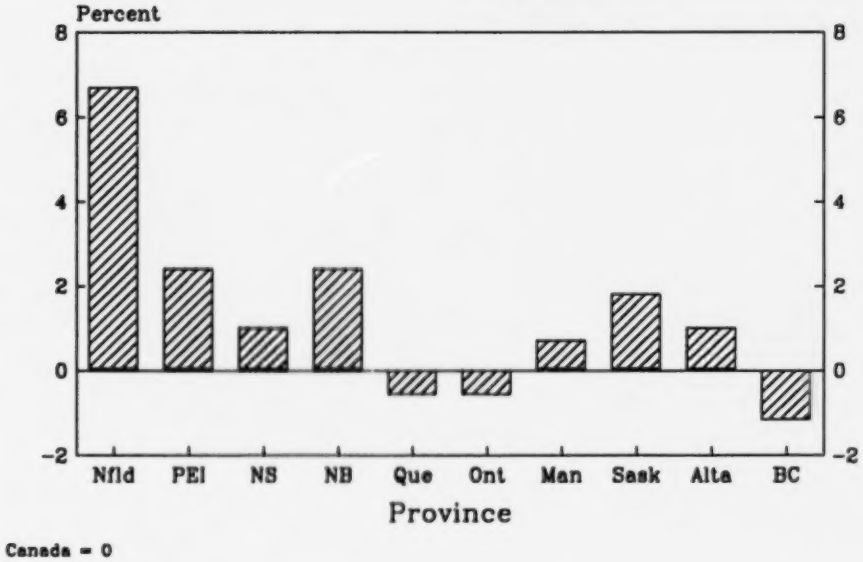
	Youth Population*			Median Age		
Province	1966	1976	1986	1966	1976	1986
	%	%	%			
Nfld.	47.3	40.7	32.1	19.3	22.6	27.9
P.E.I.	41.2	34.9	28.4	24.0	26.6	30.6
N.S.	39.8	33.4	26.4	24.7	27.1	31.2
N.B.	42.7	35.1	27.9	22.2	25.7	30.5
Que.	39.7	31.4	24.8	23.9	27.7	32.0
Ont.	37.0	31.1	25.1	27.2	28.6	32.3
Man.	37.6	31.9	27.1	26.7	28.0	31.3
Sask.	39.5	33.4	29.1	25.6	27.6	30.1
Alta.	40.4	33.7	28.4	24.5	26.1	29.1
B.C.	35.9	30.1	28.9	28.2	29.1	33.1
Canada	38.7	31.9	25.9	25.4	27.8	31.6

*Rate of population under 18 years per total population.
Source: Derived from Census of Canada.

Each of these indicators suggests not only has one of the most important components of our population declined significantly over the last several decades but also suggests a great deal of potential decline in the future. This is graphically illustrated in Figure 3 which shows for each province the relationship between its school age population (5-19) to its total population. The highest proportional school age population in 1986 was in Newfoundland. It was 6.7 percentage points higher than the all province average of 21.8 percent. At the other extreme, with the smallest proportional school age

populations, were Ontario, Quebec and British Columbia.

Figure 3
Proportion of population (5–19) above or below Canadian average by province, 1986



Canada = 0

One of the reasons for this is migration. When large numbers of young adults, the primary movers, migrate from one region to another they affect the population structure in both regions. The proportion of dependent children will rise in the region they have come from and fall in the region they have come to.

Migration

Canada has been called a nation of movers. Newfoundland, Canada and indeed North America emerged only after extensive migration by Europeans, primarily from England, Ireland, France, Spain and Portugal. These emigrants formed the underpinnings for what is now a country with a strong multicultural mosaic. In addition, Canadians in large numbers move around the country for education, for employment, for sociability, for entertainment and for leisure (House, 1989). While the multicultural mosaic may not be as diverse for Newfoundland, it has strong roots from certain parts of England and Ireland.

As shown in Table 8, throughout much of its post-war history, Newfoundland has endured a constant movement of its citizens out of the province - primarily to other urban areas of Canada. The province has had few migrants and insufficient industry to entice other Canadians in large numbers to settle or, indeed, Newfoundlanders to remain.

Migration is a rather complex phenomena which can originate on either of three levels: within a province, between provinces and between countries. In each case the results of large scale migration can be invigorating or devastating depending upon the size of the migrant population, upon the economic, demographic and social circumstances, and upon the viability and general conditions of the individual community, region or province. Consequently, population trends arising from natural increase are entangled with, and frequently masked by, migration.

Table 8

Interprovincial Migration and Immigration to Newfoundland, 1978 - 1987.

Year[a]	Net Migrants[b] Children	Adults	Total	Total Immigrants
1987	(836)	(3566)	(4402)	458
1986	(1113)	(2879)	(3992)	274
1985	(1284)	(4413)	(5697)	325
1984	(971)	(2572)	(3543)	299
1983	(845)	(1599)	(2444)	275
1982	220	1609	1829	406
1981	(1606)	(4087)	(5693)	480
1980	(803)	(2749)	(3552)	541
1979	(614)	(2983)	(3597)	553
1978	(912)	(2462)	(3374)	374

[a] The data on interprovincial migration are compiled for the year beginning July 1 and ending June 30; thus 1978 refers to July 1, 1978 to June 30, 1979.
[b] Brackets () indicate net out-migration.
Source: Statistics Canada, *Interprovincial and International Migration of Children in Canada,* and *Inmigration, Emigration and International Migration*, various years.

Intraprovincial migration, the movement of people within provinces, has little direct effect on the total population of a province, but can have a significant effect on the infrastructure of small communities, the provision of regional services and the ability of many small rural schools to sustain adequate educational programs. Between 1961 and 1986, intraprovincial migration played a large role in transforming rural Newfoundland. During that time, there was a sustained movement of citizens out of rural communities and into urban centres (urbanization), resulting in a rural population

declining from 74% to 50%. Further, demonstrating the impact of this change, the number of communities dropped 16.8% from an estimated 850 to 707 during the same period. The direct effects of these changes are reflected in new transportation systems, centralized schools, new home construction, and labour force participation rates. However, the indirect effects of these changes on factors such as family size, job satisfaction, and student retention are to a large degree immeasurable, but no less significant.

Interprovincial migration, the movement of people from one province to another, can have serious effects on a province such as Newfoundland. The problem is that many, if not most, migrants are from rural communities. This is part of the *double whammy* facing rural Newfoundland - their citizens moving both to urban centres in the province or to other provinces. The implications of this phenomenon stretch far beyond the educational system.

Table 9, which follows, provides a summary of the interprovincial movement of children for 1988. The table shows that while more children left Newfoundland than entered, it is not in fact a highly mobile province. The total mobility rate, a measure of all movements (in + out + migrants) per total population of children, shows that the western and maritime provinces were the most mobile, Quebec the least, and Newfoundland falling at the Canadian average. While among the lowest (3.1), Ontario accounted for over 30% of the total movement (71,433) in the country.

The out-migration rate, a measure of the children who leave a province per total population of children, shows much the same result. Newfoundland at 1.9 was again among the lowest in Canada with the western provinces and Saskatchewan in particular having the highest rates of out-migration. While Canada may be a nation of movers, the

children of Newfoundland are currently among its least mobile citizens.

Table 9

Total Mobility Rate and Out-migration Rate of Dependent Population by Province, 1988.

Province	Interprovincial Migration		Immigrants	Population <18	Total Mobility Rate	Out-Migration Rate
	IN	OUT				
	a	b	c	d	(a+b+c)/d*100	b/d*100
Nfld	2,865	3,322	99	174,000	3.6	1.9
PEI	1,112	874	38	35,900	5.6	2.4
NS	5,345	5,486	296	227,600	4.9	2.4
NB	4,242	4,309	121	193,300	4.5	2.2
Que	7,404	8,446	7,759	1,613,700	1.5	0.5
Ont	25,476	21,374	24,583	2,329,300	3.1	0.9
Man	5,481	8,000	1,340	289,900	5.1	2.8
Sask	4,840	9,485	614	292,100	5.1	3.3
Alta	17,882	18,952	3,757	675,200	6.0	2.8
BC	18,619	12,852	5,794	727,600	5.1	1.8
Can	95,036	95,036	44,429	6,586,100	3.6	1.4

[a,b] Statistics Canada, *Interprovincial Migration of Children in Canada*, 1988.
[c] Emigrants were unavailable at printing, however, numbers were not estimated to be significant.
[d] Statistics Canada, *Postcensal Annual Estimates of Population*, 1988.

However, House says these figures mask a great deal of movement. He maintains that fewer people move to Newfoundland from other provinces than to many other parts of Canada. He says:

> *What distinguishes Newfoundland is not that Newfoundlanders choose to leave their province at a greater rate than people in other provinces, but rather that other Canadians choose to move to Newfoundland at a lower rate than they do*

to other provinces. (p. 12)

With few exceptions, interprovincial migration of children in Newfoundland over the years has been negative [net out-migration]; the ten year average being (876). This translates into a loss of 40 teaching positions per year. In recent years, as many as 60 positions per year have been lost. Given the geographic, demographic and economic conditions of the province, the long-range outlook is expected to change little. Admittedly, there may be some isolated impacts resulting from Hibernia or other large-scale developments, however, they are expected to create little in the way of sustained settlement. In this regard, the conclusions reached in the *Trends Report* (1986) still appear sound.

> *In the case of offshore Newfoundland and Labrador, the geographical areas which are chosen for development will largely determine the extent of migration. If local communities cannot supply all of the required personnel then development will affect a much larger geographic base. It is expected that only highly skilled, technical and managerial personnel will be imported. Other influences such as economic climate, recruitment policies, and skill requirements will affect the degree of speculative in-migration.*
>
> *The proposed NATO Base for Goose Bay, Labrador, if approved, will significantly impact that area. It is projected that the population will double from 7,000 to 14,000 within several years. What has yet to be determined is the extent to which private schools will be established within the base itself.*
>
> *Three assumptions relating to migration were proposed: (1) that large-scale in-migration related to offshore development will not begin for three to five years or longer; (2) that migration will be confined to local areas; and (3) that migration of school-age children will be minimal and confined to urban centers. (p. 13-14)*

International migration, the movement of people from one country to another, has had little impact as well. In 1988, for example, less than 0.2 percent (99) of all immigrants to Canada, settled in Newfoundland. Given the climate, geography, and the absence of an established immigrant population, it is unlikely large numbers will migrate

and stay in the province without some intervention. With population decline inevitable, differential immigration policies or measures to promote increased births may have to be considered very soon.

Enrolment Patterns

Since enrolment peaked in 1971-72 at 162,818 students it has been declining steadily, resulting in a contracting of the educational system. While some areas of the Province have been declining since the late sixties others have eluded large-scale losses until recently. The net result is that since 1971-72 the actual enrolment in the Province declined by 32,709 (20.1%). However, adjusting for the introduction of grade 12 in 1983-84, the loss is probably closer to 44,000 (27.0%). Currently, enrolments have been declining by approximately 3,000 students per year.

The composition of the student population, as illustrated in Table 10, shows a dramatic decline at all levels except high school and special education. In the twenty years since 1968-69, primary levels, including Kindergarten, have declined by 39.0%, elementary by 40.7% and junior high by 23.1%. On the other hand, high school levels have increased by 72.3% and special education by 2280.4%. One should be cautious, however, in interpreting these increases. Both groups have been influenced by several important factors: (1) the *baby-boom*, (2) improved retention levels, and (3) the introduction of new policies and programs.

The increasing numbers of students currently enroled in high schools is the final product of the high birth rates of the post-war era. While the rate of students reaching high school has not reached desirable levels, nonetheless it has been increasing. For

example, the high school participation rate, a measure of the enrolment in the final year of high school as a percentage of Grade 8 enrolment four years earlier, increased significantly from 66 percent in the early seventies to 87 percent by the mid eighties (Educational Perspectives, 1988). How much more it will continue to improve is difficult to determine; however, it is likely the rate will follow a polynomial distribution and soon level off.

Table 10

Enrolment by Level, Selected Years.

Year	K	Primary	Elem	Junior High	Senior High	Special Education	Total
1989-90[a]	8,666	25,607	25,843	29,071	29,921	11,402	130,109
1988-89	8,959	25,753	26,739	30,297	30,537	10,710	132,995
1987-88	9,086	26,615	27,737	31,677	30,948	10,165	136,228
1986-87	9,338	27,291	29,445	33,047	30,816	9,441	139,378
1985-86	9,375	28,775	30,702	34,571	29,738	9,171	142,332
1984-85	9,902	29,643	31,907	35,339	29,431	8,796	145,116
1983-84[b]	9,823	31,240	33,300	35,963	28,744	8,533	147,603
1978-79	11,814	36,761	37,801	39,743	20,276	6,779	153,174
1973-74	12,813	40,997	42,515	39,711	19,461	4,855	160,352
1971-72[c]	12,887	43,411	43,353	39,868	20,379	2,920	162,818
1968-69	11,227	45,347	44,014	38,029	17,214	479	156,310

[a]Preliminary.
[b]Reflects the introduction of grade 12.
[c]Peak enrolment year.

The introduction of an additional year of high school (for some students an

additional two years) and a number of new initiatives and programs in the general field of special education (e.g. speech pathology, hearing and visual impairment, educational psychology, etc.), have contributed to the sizable increase in those areas. The effects of these policies and others (e.g. the raising of the school leaving age to 16 years in 1987), can be seen by the increase in the number of 17 year olds in school. As a direct result, the number in this group has increased from 3,902 to 9,848 (152.4%) between 1982-83 and 1989-90.

Within the Province, the rate of decline varied among school districts. Table 11, presents the actual enrolments for each school district as well as the percentage change for the same period. The highest rates of change were in Bay d'Espoir Integrated (-9.4 percent) and Bay St. George Roman Catholic (-9.2 percent) while the lowest rates were in Conception Bay South Integrated (0.9 percent) and Labrador Roman Catholic (-0.2 percent).

For many U.S. states enrolments have been rising since the late 1970s and for many Canadian provinces since the early 1980s. Figure 4 illustrates the enrolment changes between the 1986 and 1988 school years for each Canadian province. Only in the Atlantic region were significant declines still taking place and, within that region, Newfoundland showed the highest rate of decline (4.6%).

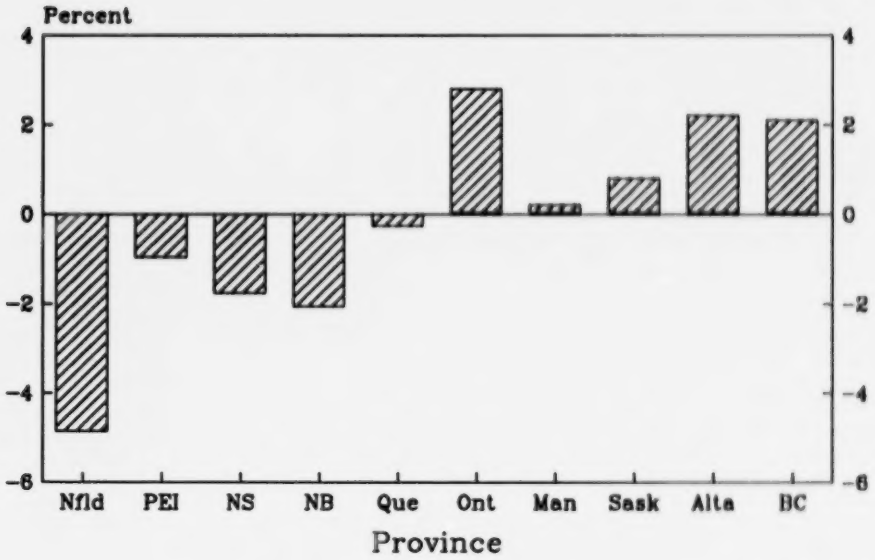
Both improved participation rates and the introduction of new programs have served to buffer declining enrolments. Without these influences, there would currently be fewer than 120,000 students enroled in school. Given the decline in student enrolment over the years, it is conceivable that this Province will not possess the youngest population in Canada for much longer.

Table 11

Enrolment Change by School District, 1986-87 to 1988-89

School District	1986-87	1988-89	Change
			%
Integrated Districts:			
Vinland-Straits of Belle Isle	3991	3718	-6.8
Deer Lake-St. Barbe	4421	4124	-6.7
Green Bay	3439	3166	-7.9
Exploit's Valley	4465	4152	-7.0
Notre Dame	3357	3085	-8.1
Terra Nova-Cape Freels	8448	7968	-5.7
Bonavista-Trinity-Placentia	6593	6403	-2.9
Avalon North	9390	8794	-6.4
Avalon Consolidated	12006	11559	-3.7
Burin Peninsula	3712	3422	-7.8
Bay d'Espoir	1922	1741	-9.4
Port aux Basques	2657	2527	-4.9
Bay of Islands-St. Georges-Burgeo-Ramea	6922	6517	-5.9
Labrador East	2239	2190	-2.2
Labrador West	2075	2004	-3.2
Conception Bay South	3321	3350	0.9
Roman Catholic Districts:			
Bay St. George	2249	2043	-9.2
Burin Peninsula	4327	4193	-3.1
Conception Bay Centre	1714	1680	-2.0
Conception Bay North	2603	2485	-4.5
Exploit's-White Bay	2787	2661	-4.5
Ferryland	2188	2085	-4.7
Gander-Bonavista-Connaigre	2782	2560	-8.0
Humber-St. Barbe	4362	4123	-5.5
Labrador	2918	2912	-0.2
Placentia-St. Mary's	3570	3300	-7.6
Port au Port	3752	3556	-5.2
St. John's	19957	19649	-1.5
Pentecostal Assemblies	6906	6740	-2.4
Seventh Day Adventist	305	288	-5.6
Provincial Total	**139378**	**132995**	**-4.6**

Figure 4
Enrolment change by province
1986 to 1988



Revised projections were prepared to provide the framework for the development of teacher forecasts. These projections are based on a series of assumptions relating to fertility, families and family size, mortality, migration and student participation, some of which have already been examined. The findings are presented in Chapter 4 and the general methodologies used are presented in Appendix A.

Endnotes:

---

1. *More specifically the total fertility rate is a measure of the average number of children that would be born per woman if all women lived to the end of their childbearing years and, at each year of age or age group, they experienced the birth rates occurring in the specified year.*

2. *For a comprehensive examination of the relationship between labour force participation and fertility read Kasarda, Billy & West (1986).*

III. DYNAMICS OF THE TEACHER WORKFORCE

Thus far, a sketch has been presented of an educational system existing in an era of tremendous demographic upheaval - an era that will likely continue well into the next century - in which enrolment decline will be far more devastating than that encountered throughout the rest of North America or, with the possible exception of western Europe, the entire world. This phenomenon has many far reaching implications for the Newfoundland education system, yet none is as visible a sign for the general community as that of an aging teacher workforce.

Changing Characteristics

Under normal conditions aging is a problem requiring a great deal of understanding and patience. Exacerbating the problem for teachers is a lack of mobility, increased stress and lack of promotion opportunity. School boards have to find new ways to stimulate and motivate their teachers. Provincial ministries of education, recognizing that part of the solution requires additional money, lobby hard for a larger share of the Government pie when in fact their political constituency (parents of school-age children) is in decline.

Of all the issues facing teachers today few are as misunderstood. Age brings out the best and worst in people. Grambs and Seefeldt (1977) noted that those weaknesses in one's teaching that were masked by youthful charm and vigour at age 25 are not forgivable at age 45. The mediocre teacher at age 25 can be tolerated; the mediocre teacher at age 45 is despised.

On the other hand, experienced teachers add a great deal to the quality of the workforce. Grambs and Seefeldt suggest that older teachers have the following characteristics: (1) are better educated, (2) are involved in more professional education organizations, (3) are more politically active, and (4) have stronger community ties. The authors conclude that older teachers know, from their years of dealing with children and administrators, what will work and what will not.

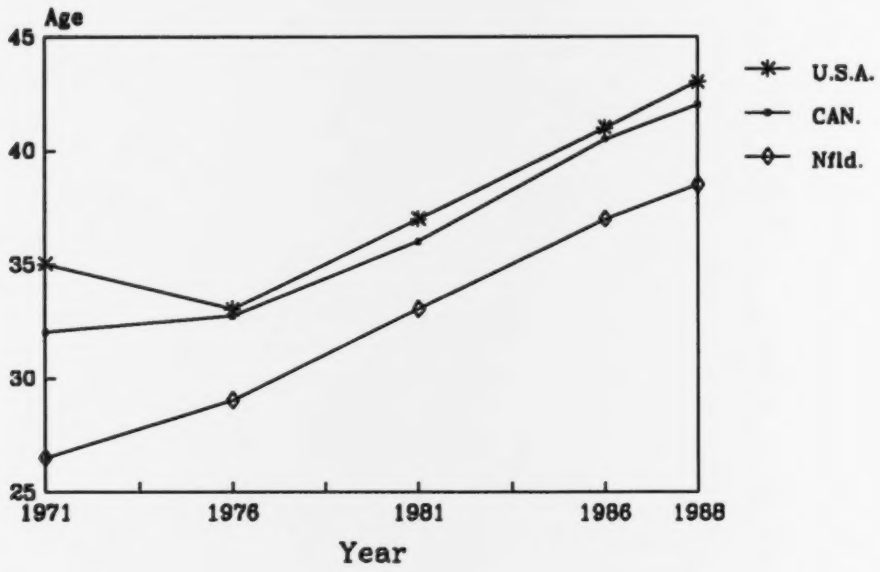
Teaching as a career, unlike many other professions, has no built-in advancement. Because of this, and because teachers are involved in the same processes from one year to the next, many get in the habit of avoiding risk and change. Yet, society is in a constant state of change and teachers are one of the chief purveyors of that change. Such is the dichotomy older teachers must frequently struggle with.

What distinguishes older teachers from younger ones? Are there characteristics peculiar to older teachers? Will large numbers be retiring in the next few years? Are first-time teachers being hired? Will Newfoundland continue to have one of the youngest teacher workforces in North America?

The most striking aspect of the evolution of the teacher workforce in this province has been its ever increasing median age. Figure 5 shows the median age of teachers in the United States, Canada and Newfoundland from 1971 to 1988. While all three have been rising in parallel since 1976, the median age has been consistently lower for Newfoundland - undoubtedly caused by higher than average birth rates and subsequent expansion of the educational system in which large numbers of very young teachers were recruited for the workforce. It is interesting to note that in the era prior to 1971 (comparable data for Newfoundland are unavailable) the gap between Newfoundland and North America was

even more pronounced. In 1961, for example, the median age of teachers in the United States was 41 years, yet is estimated at under 30 years for Newfoundland.

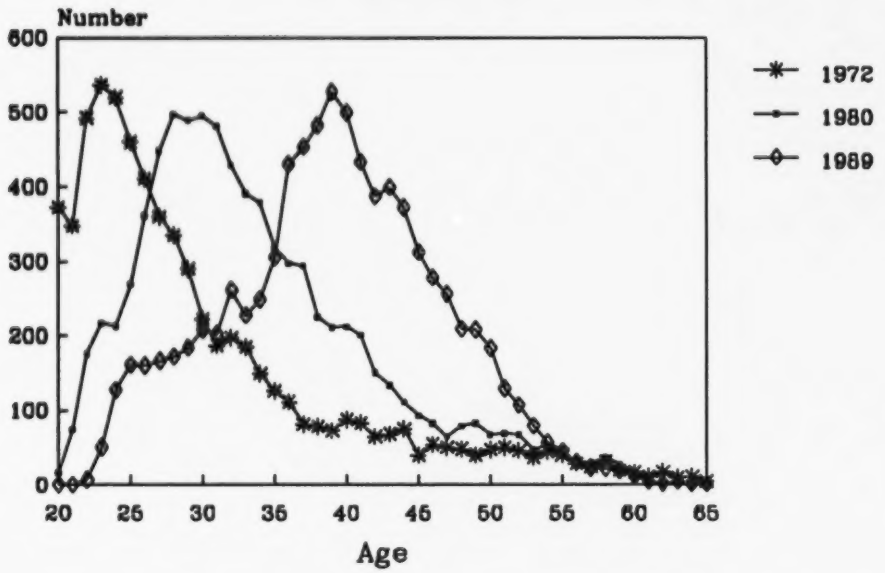
Figure 5
Median Age of Teachers
1971 - 1988



Since the early 1970s, there has been a constant aging of the teacher workforce. The aging process in Newfoundland is graphically illustrated in Figure 6. Since 1972-73 the age distribution changed from one which was positively skewed (median=26.4 years, n=6937) to one which in 1989-90 resembles a normal distribution (median=39.0 years, n=8439). This shift toward the middle years came about largely because the number of teachers increased marginally during a time when enrolments were declining, thus reducing the annual infusion of new teachers. Although projections of the teacher workforce are presented in Chapter 4 of this report, at this point it is not hard to visualize what the age

distribution curve will look like in several years.

Figure 6
The aging teacher workforce
1972, 1980, 1989



The average age among classroom teachers has changed only marginally over the last three years. As presented in Table 12, the average age of teachers in the Province increased from 38.1 to 38.9 years during the period 1987-88 to 1989-90. While on the surface this increase seems rather small, it is likely the result of increased retirements in recent years. School districts having the oldest teachers were located in urban areas (e.g. St. John's, Grand Falls and Corner Brook), while the youngest were located in largely rural areas (e.g. Labrador, Northern Peninsula and south coast). The Pentecostal Assemblies school district, which encompasses the entire province, had a low mean age (36.9 years) and high standard deviation (8.5 years) in relation to other districts.

Table 12

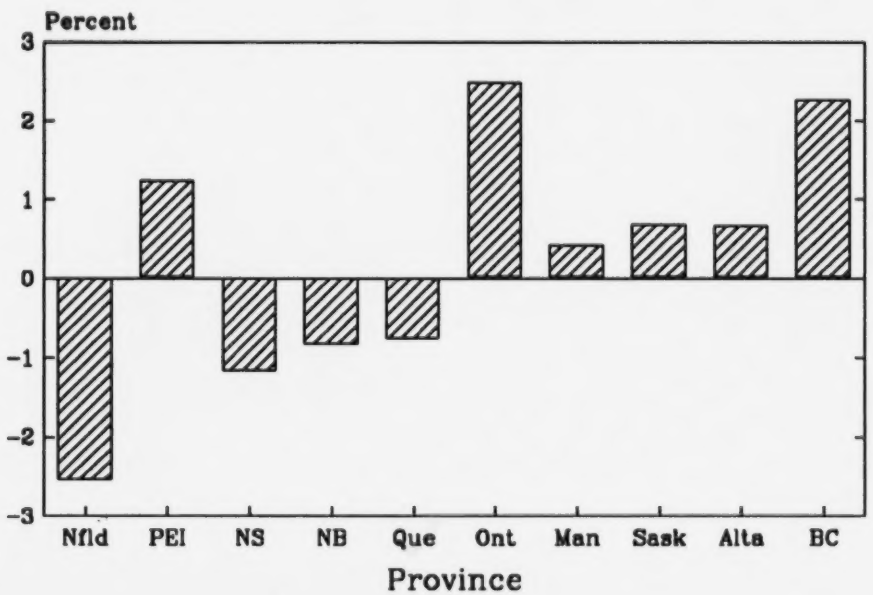
Average Age of Teachers[a] by School District, 1987-88 and 1989-90.

School District	1987-88 Mean	1987-88 SD	1989-90 Mean	1989-90 SD
Integrated districts:				
Vinland-Straits of Belle Isle	35.6	7.9	36.2	7.4
Deer Lake-St. Barbe	37.0	6.7	37.9	6.8
Green Bay	37.0	7.1	37.9	6.9
Exploits Valley	39.8	7.0	40.1	7.2
Notre Dame	39.1	7.2	40.1	6.9
Terra Nova-Cape Freels	38.2	7.8	38.7	7.6
Bonavista-Trinity-Placentia	37.4	8.1	37.7	8.0
Avalon North	39.4	7.2	39.2	7.0
Avalon Consolidated	40.0	7.7	40.6	7.4
Burin Peninsula	36.8	6.5	38.1	6.5
Bay d'Espoir	34.5	7.2	36.4	7.3
Port aux Basques	36.4	6.8	37.2	6.8
Bay of Islands-St. Georges-Burgeo-Ramea	39.2	7.3	39.4	7.1
Labrador East	34.6	7.9	35.4	7.8
Labrador West	35.7	7.8	36.4	8.0
Conception Bay South	37.8	7.7	39.1	7.4
Roman Catholic districts:				
Bay St. George	38.3	7.3	40.0	7.0
Burin Peninsula	36.2	8.2	37.1	8.4
Conception Bay Centre	38.9	7.7	39.2	7.7
Conception Bay North	37.2	7.3	38.5	6.8
Exploits-White Bay	39.2	7.7	40.0	7.7
Ferryland	38.3	7.0	39.8	6.8
Gander-Bonavista-Connaigre	38.2	7.4	38.6	7.0
Humber-St. Barbe	39.6	7.9	40.0	7.5
Labrador	36.8	8.0	37.6	8.1
Placentia-St. Marys	38.8	7.2	40.5	7.1
Port au Port	38.2	6.6	39.5	6.9
St. John's	39.5	7.1	40.5	6.9
Pentecostal Assemblies	35.8	8.2	36.9	8.5
Seventh Day Adventist	42.5	8.7	43.7	7.3
Province	**38.1**	**7.6**	**38.9**	**7.5**

[a]Excludes district office personnel.

While the size of the teacher workforce has increased since the 1960s, the last several years has seen a contraction of about 60 teaching units per year due primarily to declining enrolments. The effect of these changes and those occurring in other provinces over the last two years is illustrated in Figure 7. In those areas where enrolments have been increasing for some years, the number of teachers has been increasing. Yet, in the Atlantic provinces and Quebec, with the exception of Prince Edward Island, where enrolments have been declining for some time, the teacher workforce has been decreasing.

Figure 7
Change in teacher workforce by province
1986-87 to 1988-89



It is not possible to discuss the changing dynamics of the teacher workforce without examining its impact on female teachers. It is the case that men are more likely to have long and continuous careers than are women, but it is equally likely that this is becoming

a less important difference, and teachers of both sexes constitute a very stable workforce. Most teachers are in jobs they intend to keep until they retire or until they are promoted or transferred to other jobs with comparable job security. Of those who do leave their jobs, for the most part it is to accept a teaching position in another school with the same School Board.

Few would argue that spending most of one's working life performing the same role can be difficult, demanding and stressful. Particularly difficult is the inability to effect changes in one's life during times when change is considered necessary. Female teachers who grow old in what is essentially a male dominated profession, at least in the administrative domain, are particularly affected. Although most elementary school teachers are women, most department heads, principals, superintendents, assistant superintendents, program coordinators, and school board members are men. Teaching for many women is characterized by one change only in status during their career - tenure. They are less likely to get out of the classroom and into administration, or out of the profession altogether. This growing inability to move or to change one's status has immense implications for the teacher workforce in general and female teachers in particular.

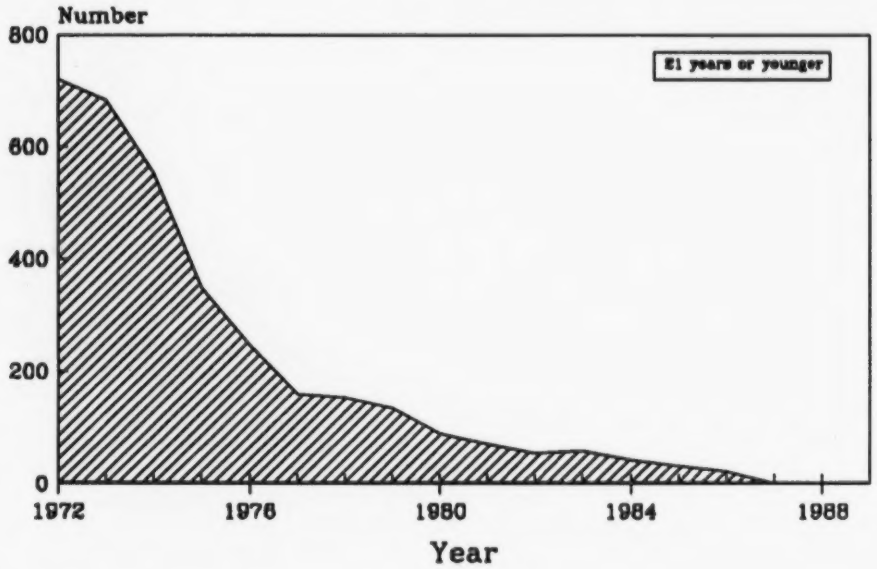
The next three sections examine changes in the characteristics of the teacher workforce. The characteristics that are examined originate from either of three mechanisms: *inputs* (acquisitions), *flows* (promotions and transfers), and *outputs* (withdrawals).

Inputs

In the past, demand for teachers was far greater than the teacher training institutions could produce (when demand exceeds supply it is referred to as a shortage). As a result, many teachers were hired with little or no university training. They were, on average,

younger when they began their careers and contributed significantly to the relatively young median age of the workforce. This is vividly illustrated in Figure 8. In 1972 there were 720 teachers 21 years or younger of whom 218 were 20 years, 124 were 19 years, 29 were 18 years and one was 17 years. Today none below the age of 22 is hired - largely because it is virtually impossible to meet the teacher training requirements before that age.

Figure 8
Extinction of the young teacher,
1972 - 1988



Nonetheless, the age of beginning teachers is still relatively young. Table 13 which follows, presents the actual age for all first-time teachers for each of the last five years. These data are surprisingly congruent having almost identical frequency distributions and, therefore, a greater degree of predictability. The median age, while increasing slightly, is a young 23.5 years. The majority of new teachers is distributed around the 22 - 25 age

range. Since 1985, three teachers over the age of 40 and few over the age of 30 have been hired. It is evident that most are young graduates coming directly from universities or teacher training institutions. The existence of large numbers of unemployed teachers actively seeking employment in the teaching profession seems inconsistent with these data.

Table 13

First-time Teachers[a] by Age, 1985 - 1989.

Age	1985	1986	1987	1988	1989
<21	1	4	-	-	-
21	21	22	-	-	-
22	63	68	20	8	7
23	56	55	54	28	41
24	26	25	41	54	66
25	19	22	19	33	42
26	15	12	13	15	17
27	7	11	14	12	13
28	9	9	5	11	13
29	4	5	8	7	6
30	1	1	9	5	2
31	6	6	4	5	6
32	3	1	3	5	1
33	3	1	1	2	2
34	2	1	-	2	1
35	2	2	2	1	-
36	-	1	2	-	2
37	1	1	1	-	2
38	-	1	-	1	1
39	-	-	-	-	-
40+	-	-	-	-	3
Total new	239	248	196	190	225
Percent new	2.8	2.9	2.3	2.2	2.7
Median age[b]	22.4	22.5	23.9	24.6	24.4

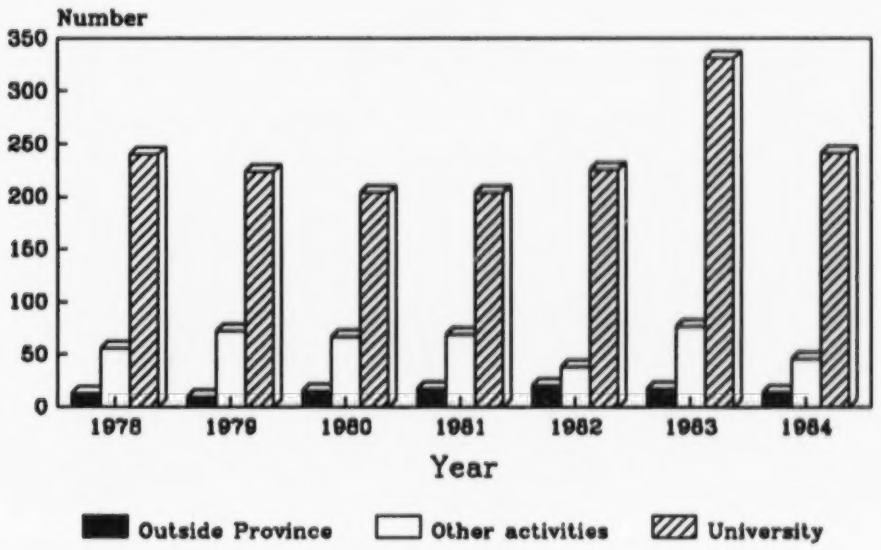
[a]Full-time and part-time teachers excluding district office personnel.
[b]Based on exact age, 1987 to 1989.

Traditionally, teachers have been recruited from three main sources: outside the province, universities, or other activities. The majority has been hired directly from universities - particularly Memorial University of Newfoundland. A display of recent hirings of new teachers is presented in Figure 9. For most years, between 70% and 80% were recruited directly from university. While some of these were returning Newfoundland students and some were students from other provinces, the majority attended Memorial University. During the 1960s, on average, 1,100 new teachers hired each year came from university. This number dropped significantly during the seventies and has remained relatively stable in recent years at approximately 220.

With the exception of a brief period during the early 1970s, the number of new teachers recruited from outside the province has been small. Many of these teachers were recruited for small or isolated schools, or for specialist assignments in which there was a shortage of local teachers. Most new teachers recruited from non-university activities have been recent graduates and were actively seeking employment.

What do these data suggest about teacher recruitment? A number of conclusions are possible, for example: (1) school boards are seeking young graduates from teacher training institutions in order to balance their aging teaching staffs with younger teachers; (2) young teachers are the only group applying for teaching positions as many over the age of 30 have found other career opportunities; and (3) graduates who have not successfully found employment in teaching after several years are unlikely to so without further studies.

Figure 9
Source of new teachers
1978 – 1984



Flows

While the teacher workforce is steadily aging in comparison with other vocations, it is by no means static. Some parts of it are expanding while others are contracting, teachers are leaving to retire or to pursue other careers while new teachers are being hired to replace them, and those that remain in their jobs are getting older.

While it is dynamic, there has been a gradual decline in teacher turnover. The fact there is a decline is no revelation to teachers and prospective teachers. What is not known, however, is the full impact a decline in teacher turnover will have on the education system, the reasons for it, and some indication as to when it might end. The decline in

teacher turnover is undoubtedly a reflection of the general state of the economy. Teachers cannot or will not give up tenured positions when the job market offers few prospects for comparable or better positions. Nor can teachers count on moving from district to district any more.

The full extent of what happens among teachers who stay in the workforce from one year to the next is unknown. Some leave a particular school to teach elsewhere in the district and others leave to teach in another school district entirely. While data on teachers are collected annually, information concerning some types of movement are not readily available. For example, no information exists on the number of teachers who stay in the same school and are assigned new grade levels or responsibilities. Those without any changes are described, at least in a given year, as inactive. The teacher workforce is a far more dynamic enterprise than casual observation might conclude.

Table 14 shows the numbers of teachers who changed schools over the last two decades. While the total number moving declined by 650 (56.9%), more significant was the fact that the number of teachers moving from one district to another dropped by 647 (84.7%). While there still remains considerable movement within districts, the opportunities for teachers to move from one location to another is small in comparison. For many classroom teachers the only opportunity for change is to another school in the same district.

Some indication of the extent of teacher movement is presented in Table 15. The total number of teachers moving to other schools between 1987-88 and 1988-89 is recorded for each school district. In addition, relative movement, a measure of teacher movement as a proportion of full-time equivalent teachers, is recorded. Results show little correlation

among school districts. Relative movement in districts with more than 10,000 students showed considerable variance (2.8% - 11.2%) as did districts with fewer than 4,000 students (3.1% - 13.7%). On the other hand, the relative movement of teachers to other districts was low (less than one percent) in many districts encompassing large urban populations greater than 10,000 such as St. John's, Gander and Grand Falls, and high (greater than three percent) in districts with large segments of their population in rural communities such as southern Labrador, the Northern Peninsula, and the south coast.

Table 14

Previous Years Teachers Moving to Other Schools, Selected Years.

Year	Teaching Same District	Teaching Another District	Total
1988-89	375	117	492
1987-88	387	104	491
1986-87	449	123	572
1985-86	339	126	465
1984-85	321	143	464
1983-84*	497	252	749
1978-79	270	125	395
1973-74	279	428	707
1968-69	378	764	1142

*Reflects the introduction of grade 12.

Table 15

Previous Years Teachers Moving to Other Schools by School District, 1988-89.

School district	Teaching in Same District		Teaching in Another District		Total	
		%		%		%
Integrated districts:						
Vinland-Straits of Belle Isle	24	9.4	11	4.3	35	13.7
Deer Lake-St. Barbe	11	3.9	3	1.1	14	5.0
Green Bay	6	2.9	4	1.9	10	4.8
Exploits Valley	7	2.6	5	1.8	12	4.4
Notre Dame	9	4.2	1	0.5	10	4.7
Terra Nova-Cape Freels	14	2.8	12	2.4	26	5.2
Bonavista-Trinity-Placentia	10	2.8	5	1.4	15	4.2
Avalon North	26	5.0	5	1.0	31	6.0
Avalon Consolidated	18	2.8	-	0.0	18	2.8
Burin Peninsula	9	4.1	4	1.9	13	6.1
Bay d'Espoir	10	7.5	5	3.8	15	11.3
Port aux Basques	6	4.1	2	1.4	8	5.5
Bay of Islands-St. Georges	21	5.5	4	1.0	25	6.5
Labrador East	8	4.7	7	4.1	15	8.8
Labrador West	6	5.1	2	1.7	8	6.8
Conception Bay South	3	1.7	1	0.6	4	2.3
Roman Catholic districts:						
Bay St. George	2	1.5	4	3.0	6	4.4
Burin Peninsula	10	4.0	8	3.2	18	7.2
Conception Bay Centre	4	4.1	2	2.1	6	6.1
Conception Bay North	3	2.0	3	2.0	6	4.0
Exploits-White Bay	8	4.5	1	0.6	9	5.1
Ferryland	3	2.3	1	0.8	4	3.1
Gander-Bonavista-Connaigre	4	2.3	-	0.0	4	2.3
Humber-St. Barbe	8	3.1	4	1.6	12	4.7
Labrador	4	2.0	3	1.5	7	3.5
Placentia-St. Marys	8	3.8	5	2.4	13	6.3
Port au Port	6	2.6	5	2.2	11	4.8
St. John's	108	10.4	8	0.8	116	11.2
Pentecostal Assemblies	19	4.8	2	0.5	21	5.3
Seventh Day Adventist	-	0.0	-	0.0	-	0.0
Province	**375**	**4.7**	**117**	**1.5**	**492**	**6.1**

Outputs

Teachers leave the teaching profession for any number of reasons. Some leave to change careers, to return to university, for health and personnel reasons, to assume family responsibilities, to retire, to work or teach outside the province, or to work or teach in the private sector. The number of teachers who leave the workforce each year has been declining. As shown in Table 16, between 1968 and 1988 teacher withdrawals declined from 1322 to approximately 600. The opportunities for moving in to and out of the educational system are declining and, as a result, teachers are remaining in the system much longer. As the system contracts and there are fewer new hirings, it is likely that withdrawals will decline even further.

Paradoxically, the teacher workforce appears more volatile in Newfoundland than in the rest of Canada. The withdrawal rate has been consistently higher in this province. In 1966, for example, over one-quarter of the province's teachers withdrew from the system for one reason or another, a rate approximately double that for much of the rest of the country. While the rate has been dropping since that time it is still high in relation to the overall rate for Canada, due in part to the low population density and isolation of much of the province.

Table 16

Teacher Withdrawals and Withdrawal Rates for Newfoundland and Canada, Selected Years.

Year	Teacher Withdrawals Nfld	Withdrawal Rate[a]	
		Nfld	CAN
		%	%
1988-89	600	7.1	
1987-88	581	6.8	
1986-87	590	6.9	
1985-86	574	6.7	6.2
1984-85	630	7.4	6.3
1983-84	513	6.3	6.1
1978-79	749	9.5	7.9[b]
1973-74	1091	15.7	10.3[c]
1968-69	1322	22.6	13.7[b]

[a]Losses as a percentage of previous year's teachers.
[b]Excludes Quebec.
[c]Excludes Quebec, Saskatchewan and Prince Edward Island.
Sources: Statistics Canada, *Characteristics of teachers in public elementary and secondary schools*, 81-202; and Newfoundland, Department of Education, *Annual General Return.*

Where do teachers go when they leave their current assignment? As presented in Table 17, some teachers return for further studies, some leave to teach elsewhere, while others leave teaching altogether.[1] Twenty years ago, a time when only 21.6% of the province's teachers held degrees, the majority left to attend universities and other teacher training institutions. Today, most teachers have at least one degree, consequently, fewer are leaving for this reason. Those that do are frequently completing a second undergraduate degree or a graduate degree. Other trends include the notable decline in the

number of teachers leaving for other occupations or for other reasons, and the slow arithmetic rise in the number of teachers retiring. With the teacher workforce aging rapidly and with so many educators expecting an imminent retirement bulge, some knowledge of retirement trends is essential.

Table 17

Factors Associated with Teacher Withdrawal, Selected Years.

Destination[a]	1968	1973	1978	1983	1988
Teaching outside province	86	127	49	28	73
Further study	445	267	90	113	148
Other occupation	256	166	55	29	47
Retirement	16	46	70	73	127
Death[b]	15	16	16	20	3
Other[c]	322	270	223	207	191
Unknown	160	145	95	43	9
Total	1300	1037	598	513	600

[a] Excluding movement of teachers between schools, formal exchanges and other reasons not constituting *de facto* withdrawal from the system.
[b] Includes ill and disabled prior to 1988.
[c] Includes household responsibility, transfers to administrative positions, unemployed, or other reasons not listed.

It should be explained that the withdrawal of teachers has not been found to have a significant correlation with the size of the teacher workforce. This is likely because (1) the diversity of reasons behind withdrawal are independent of the size of the workforce, and (2) reliability of the data is severely limited, a problem frequently encountered when data is collected through a third-party source as is done for the Annual General Return.[2] This is particularly true for the data collected on transfers and promotions.

The acquisition of teachers is a function of those who withdraw from the workforce and of changing allocation policies. As a result, while the teaching force was expanding during the 1960s and 1970s, acquisitions (teachers hired who were not on staff during the previous year) exceeded withdrawals, however, as the workforce contracted, acquisitions trailed withdrawals. Table 18, which displays acquisitions and acquisition rates, shows how the number of acquisitions has fallen from 1754 to 497 over the last two decades. Nonetheless, with the exception of one year it has changed little since 1978. Acquisition rates, the rate of new and returning teachers [acquisitions] to previous years teachers, has also fallen significantly. A good example of the difference between acquisition rates and withdrawal rates can be observed in the 1983-84 data - the year in which grade 12 was introduced. During that year, the withdrawal rate was the lowest recorded (6.3%) yet the acquisition rate was the highest recorded (14.1%).

Retirement. Not only are more teachers completing their careers in teaching, their retirement decisions are changing. There is conclusive evidence that people are retiring at increasingly younger ages. The decision to retire is not a simple one having to do with work satisfaction, health or age, but also to factors related to specific cohort and occupational experiences. Much depends on when individuals entered the workforce, their work experiences and the economic and personal security which they have or have not acquired.

Table 18

Acquisitions and Acquisition Rates, Selected Years.

Year	Acquisitions	Acquisition Rates[a]
		%
1989-90	497	5.8
1988-89	542	6.4
1987-88	630	7.4
1986-87	565	6.6
1985-86	527	6.2
1984-85	499	5.9
1983-84[b]	1140	14.1
1978-79	561	7.1
1973-74	1283	18.6
1968-69	1754	30.0

[a]New and returning teachers as a percent of previous year's teachers.
[b]Reflects the introduction of grade 12.

Traditionally, most female teachers did not remain in the workforce long enough to receive full benefits. However, today, most female teachers have chosen teaching as a career or can no longer afford to withdraw and are working through to retirement. Predicting teacher retirement for women can thus be a tricky business.

The characteristics of retiring teachers have changed dramatically during the 1980s. Aside from the fact that the total number has been climbing, a number of other conditions is evident. For example, as displayed in Table 19, the median age at retirement had dropped from 58 years to 55 years between 1981 and 1988. Further, and perhaps more

significant, is the rate at which people are retiring early. While the proportion of retirees below the age of 55 years had risen from 6.8% to approximately 22.1%, the proportion over the age of 60 years had dropped from 12.5% to 5.5% during the same period. Also significant is the number who are retiring at the age of 55 [first opportunity for most] having increased from 26.2% to 79.2%. Finally, while the numbers have increased slightly in recent years, the retirement rate, a measure of retirements per 100 teachers, has changed only marginally - from 1.1% in 1981 to 1.4% in 1989.

Thus far, analysis of this section has been limited to the years 1981 to 1988, since 1989 was an exception. During that year an additional 156 teachers retired taking advantage of an early retirement program introduced into the Teachers' Pension Plan effective June 30, 1989. The nucleus of the program is a provision that allows all teachers with 30 years of worked service to retire with full pension benefits regardless of age. Although a significant increase in the number of retirements has resulted from this program such an increase is not expected to continue beyond one or two more years.

Some understanding of where retirements have been occurring can be found in Table 20 which provides an analysis by school district. On average, over 40% of all retirements were in school districts in the Avalon region. The remainder was spread throughout the province. No district had unusually high numbers of teachers retiring.

Table 19

General Characteristics of Retiring Teachers[a], 1981 to 1989.[b]

Characteristics	1981	1982	1983	1984	1985	1986	1987	1988	1989
Total	88	67	73	75	78	87	107	127	276
Range:									
Youngest	28	42	29	33	36	37	33	35	34
Oldest	64	65	64	64	65	80	62	75	79
Central Tendency:									
Mean	57.5	57.1	56.3	55.3	55.9	55.2	54.3	55.4	53.1
Median	58.0	59.0	57.0	56.0	56.0	55.0	55.0	55.0	53.0
Mode	60.0	60.0	60.0	55.0	55.0	55.0	55.0	55.0	52.0
Early retirement:									
Number < 55	6	8	12	14	12	20	26	28	185
Percent < 55	6.8	11.9	16.4	18.7	15.4	23.0	24.3	22.1	67.0
Reasons for leaving under age 55:									
Medical reasons	4	7	11	14	10	17	23	27	29
Early retirement program	-	-	-	-	-	-	-	-	156
Other (death)	2	1	1	-	2	3	3	1	4
Late Retirement:									
Number > 60	11	8	7	6	4	4	3	7	4
Percent > 60	12.5	11.9	9.6	8.0	5.1	4.6	2.8	5.5	1.5
Retiring at Age 55:									
Number = 55	11	14	16	20	22	29	34	38	32
Percent of retirees	11.5	20.9	21.9	26.7	28.2	33.3	31.8	29.9	11.6
Percent of 55 yr olds	26.2	30.4	44.4	40.8	46.8	60.4	66.7	79.2	69.6
Retirement rate:	1.1	0.9	0.9	0.9	1.0	1.1	1.3	1.5	1.4[c]

[a]Includes district office personnel.
[b]Reflects year beginning September 1 and ending August 31.
[c]Excludes early retirement program.

Table 20

Pensioned Teachers by School District, 1986 to 1989

School district	1986	1987	1988	1989
Integrated districts:				
Vinland-Straits of Belle Isle.	1	2	3	6
Deer Lake-St. Barbe		2	3	12
Green Bay	1	2	1	8
Exploits Valley	3	3	3	14
Notre Dame	2	3	3	8
Terra Nova-Cape Freels	1	9	3	20
Bonavista-Trinity-Placentia	2	8	8	16
Avalon North	2	5	13	31
Avalon Consolidated	5	13	13	34
Burin Peninsula		2		6
Bay d'Espoir	2			2
Port aux Basques		2	1	3
Bay of Islands-St. Georges	2	8	8	12
Labrador East		1	2	4
Labrador West	2			2
Conception Bay South	2	1	2	5
Roman Catholic districts:				
Bay St. George	1	1	2	4
Burin Peninsula	2	4	4	3
Conception Bay Centre			2	3
Conception Bay North		2	3	3
Exploits-White Bay	1	8	3	6
Ferryland	1	1	2	3
Gander-Bonavista-Connaigre		2	2	6
Humber-St. Barbe	2	3	5	11
Labrador		1	2	2
Placentia-St. Marys		1	1	6
Port au Port	2	1	1	4
St. John's	11	11	22	26
Pentecostal Assemblies	2	3	1	5
Seventh Day Adventist	1			2
Province	**87**	**107**	**127**	**276**

Other Considerations

A number of other extraneous factors influence the status of the teacher workforce at any given time. They include such things as economic conditions, unemployment rates, retirement policies, child care programs, and employment opportunities elsewhere. While the list is far from exhaustive, it shows the complex nature of the decisions which affect teachers. For example, the decisions of today's Education graduates are not just the result of four to five years of teacher training but the culmination of a life time of experiences, social pressures and institutional policies.

Two factors which require further explanation include: (1) the multifarious effects of substitute teaching, and (2) the complex nature and consequences of broad based policies. Both are examined in some detail to provide a better understanding of their growing effects on the teacher workforce.

Substitute teaching. Substitute teaching means many things to many people. For some it has offered that necessary first-time teaching experience, provided contacts with principals and teachers in schools, become a career path as opportunities for full-time employment grow dimmer, provided mechanisms for teachers to leave the stress of regular classroom teaching without cutting ties to teaching completely, and provided opportunities for retired teachers to continue teaching (at least 65 days per year can be used without adversely affecting pension benefits). While, in the past it has been a temporary stepping-stone to full-time teaching, for many it has become a career in itself. Whatever the individual experience with substitute teaching, as an enterprise it is having an increasingly significant impact on the education system.

The number of substitutes has increased 32.6 percent in the last six years. As shown in Table 21, between 1982 and 1988, the total number of substitutes increased from 1,749 to 2,319. Currently, substitute teachers represent 22.5% of the total teacher workforce. What has changed significantly in recent years is the number of substitute days worked. For example, since 1982 the total substitute days worked increased 71.0%; an additional 6,200 days per year on average. In 1988, approximately 90,000 days, or the equivalent of 473 additional full-time teachers, were needed.

While the reasons for requiring substitute services are personal, administrative and educational (e.g. illness, workshops, seminars, training, etc.), no attempt is made to associate one reason as more significant than another. Two relative measures of substitute teaching - the average substitute days required per teacher, and the percentage of total teaching days substituted - provide clues to the reasons behind these rising numbers. In the first case, the average number of days requiring substitute services per teacher, increased 65%. In 1982 each teacher required the services of a substitute, on average, 6.8 days during the year. By 1988 that statistic had increased to 11.2 days; an additional 4.4 days per teacher. In the second example, the percentage of total teaching days substituted had increased from 3.6% to 5.9% during the same period. In other words, almost 6% of the total teaching days for the school year 1988-89 were taught by substitutes. Further, as the general workforce gets older, as the pressures and expectations of teaching get more intense, and as the number of available substitutes in rural areas increases, more substitutes may be required.

Teachers graduating from the teacher training programs today will find the opportunities for teaching in this province getting slimmer each year. For many, substitute

teaching is the only access to the classroom and for that reason it is becoming a necessary prerequisite to work as a full-time teacher.

Table 21

Absolute and Relative Measures of Substitute Teaching, 1982-83 to 1988-89.

Year	Full-time Teachers	Substitute Teachers	Percent
	a	b	b/(a+b)*100
1988-89	8001	2319	22.5
1987-88	8013	2309	22.4
1986-87	8059	2279	22.1
1985-86	8097	2145	21.0
1984-85	8159	2019	19.9
1983-84	8179	1834	18.3
1982-83	7767	1749	18.5

Table 21 (continued)

Year	Total Substitute Days	Average Days Worked/ Substitute	Average Days Taken/ Teacher	Percent Teaching Days Substituted	Equivalent Full-Time Teachers
	d	d/b	d/a	d/(a*190)*100	d/190
1988-89	89,809	38.7	11.22	5.91	472.7
1987-88	85,217	36.9	10.64	5.60	448.5
1986-87	77,796	34.1	9.65	5.10	409.5
1985-86	72,931	34.0	9.06	4.77	383.8
1984-85	68,648	34.0	8.42	4.43	361.3
1983-84	62,487	34.1	7.64	4.02	328.9
1982-83	52,525	30.0	6.81	3.59	276.4

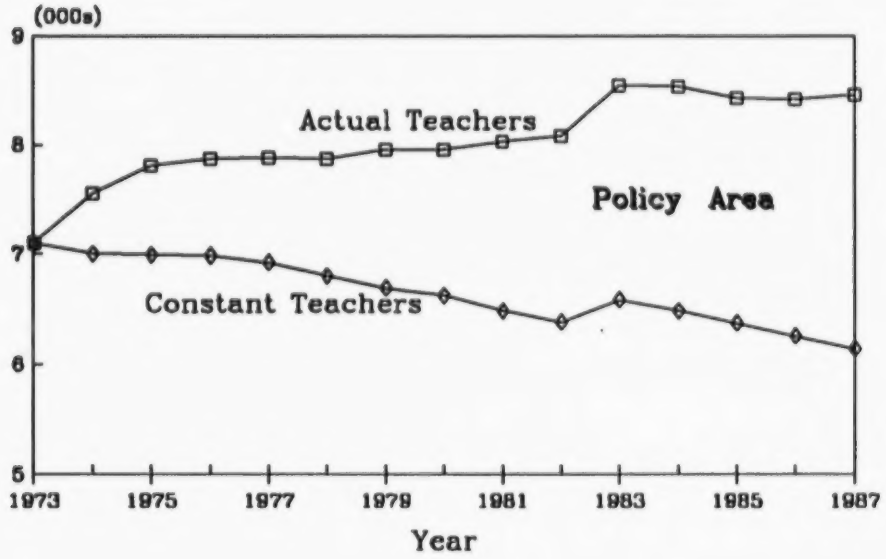
Policy. Changes in the teacher workforce are frequently influenced and affected by policy - policies developed at a provincial, district, school and even classroom level. Examples of broad-based provincial policy areas which have affected the size and content of the teacher workforce in recent years relate to teacher allocation formulas, school leaving age, high school reorganization, and teacher's pensions. Examples of district based policy areas relate to school closure, teacher deployment, and school construction.

The impact that policy changes have had on the size of the teacher workforce is illustrated in Figure 10. The allocation of teachers is based, for the most part, on student enrolment. Most of the increases have been due to the effects of new policies and programs. In order to examine the real growth of the teacher workforce, without the influences of policy decisions, it is necessary to compare the actual growth of the teacher workforce *(actual teachers)* with the likely growth of the workforce given no policy changes (*constant teachers*). By adjusting the number of teachers to reflect 1973 levels, changes in constant teachers underscores changes in provincial policy related to the allocation of teachers.[3] The variance between actual and constant teachers in the graph shows how policy decisions have led to a deliberate rise in the size of the teacher workforce compared with a potential decline had no new policies been introduced. For example, policy areas affecting the size of the workforce include increased allocations to small schools, introduction of new special education services, additional allocations to buffer declining enrolments, introduction of new district office services, as well as the introduction of Grade 12 in 1983.

Policy lies in one of the most difficult domains to forecast. Few can foresee what new policies or programs may be introduced in the 1990s and beyond or, more

importantly, which will have a direct effect on the size and characteristics of the teacher workforce. For the short-term, some understanding can be sought of the immediate issues and of the policy areas which are likely to be flagged for action. However, even the most knowledgeable educators cannot envision the issues ten years from now. All one can hope to do is present a predicted direction of events culminating in general statements about the future, such as those reported in Omni about the condition of education in the year 2000, *"Education [will] become more individualized as new media...permit students to learn according to their needs and abilities"* (Cetron and Davies, 1989).

Figure 10
Teacher allocations,
Actual and constant (1973)



Summary

How do schools come to grips with an aging teacher workforce and its concomitant problems? Do older teachers present a problem to principals, superintendents, or indeed

other teachers? What resources do schools have at their disposal to adequately address concerns expressed by society about aging? Can society afford to pension off a significant proportion of the members of a profession at age 55 when life expectancy is greater than 75. The problems and concerns about aging are here. While they may not yet share the stage with other current educational issues, their importance to a well functioning and effective educational system cannot be diminished.

The problems for administrators are quickly becoming apparent. Even if present conditions remain unchanged, demographic changes will in themselves lay the foundation for concern. There is, for example, a real difference between a school with 70% of its teachers under 30 years of age, and a school with 70% over 40 years of age.

With teacher turnover declining dramatically, no longer can new or even experienced teachers shop among schools or school districts for better positions. Teachers are staying in one or two school systems for much of their working life. In all of this, one trend is clear - the unwavering increase in age of the teacher workforce. The older teacher is rapidly becoming education's new majority. Undoubtedly, the issues that affect this group are germane to the entire education system.

Endnotes:

---

1. Note that these data exclude teachers and administrators who withdrew from school district office positions.

2. The Annual General Return is distributed to schools each year to collect information about students, courses, programs, teachers and attendance.

3. The year 1973 was chosen since it was the first year for which comparable data were collected.

IV. A VIEW TO 2000: Education projections

As enrolments continue to decline so does the demand for teachers unless modified by policy changes in teacher allocations. When new teachers are not needed, the remaining teachers stay on, getting older with few opportunities for change. The teachers who have achieved tenure and have long since reached the upper limits of the pay scales stay on because there are no jobs in adjacent or more convenient schools, and there are few reasonably paid job opportunities in the private or public sectors for middle-aged ex-school teachers.

The primary purpose of this chapter is to provide projections of the educational system that will enable educators to get a better understanding of the changes that are occurring around them. To address that purpose, projections of student enrolments, the size and distribution of the teacher workforce, outputs from the system, and inputs to the system are provided. An explanation of the methodologies used is presented in Appendix A.

Student Enrolment

There is likely to be no halt to the downward movement of the student population until some time in the next century. The two main contributing factors, births and migration, are expected to continue to work against any such increases. This finding runs contrary to a number of studies such as the recent report by the Canadian Teachers' Federation (1989) which predicted that enrolments would begin rising in this province as early as 1991-92. Table 22 displays the projected enrolments for Kindergarten, primary (1-3), elementary (4-6), junior high (7-9), senior high (10-12) and general special education

to the year 2000.

The findings suggest a continued and even more perilous decline than expected. By the year 2000-01, enrolments will drop to 101,332 a decline of 22.1% during the projection period (most likely scenario). Kindergarten, primary and elementary enrolments will have dropped 21.8%, junior high and senior high enrolments 23.7%, and special education 21.1% during the projection period. Few areas will escape the effects of this decline. Even traditional growth areas like general special education and French immersion will eventually stabilize and decline. The only areas to grow will be programs in their embryonic stage and new programs not yet envisaged. While they will not impact the gross enrolments to a large degree they can impact enrolments in other ways. For example, rising enrolments in general special education over the years have inversely influenced grade specific survival rates. A graphical representation of the findings showing the high, most likely and high projections is presented in Figure 11.

Extrapolating school district projections is a more tenuous exercise. Caution should be applied when interpreting the projections since they are derived data. It is unlikely, for example, that broad-based provincial assumptions will apply equally to all districts or that general demographic conditions will follow similar paths throughout the province. Since they are based primarily on past trends, therefore the projections are only reliable as a tool as long as the trends continue. While the projections for individual school districts may gradually deviate from the actual enrolments over time, nonetheless they should provide a valuable tool for school boards as to the general direction and size of the likely decline.

Table 22

Projected Enrolments by Level, 1990 - 2000

(Most likely)

Year	K	1-3	4-6	7-9	10-12	Spec Educ	Total
1990-91	8,633	25,290	25,222	27,832	28,673	11,267	126,916
1991-92	8,227	24,897	24,816	26,939	27,660	10,968	123,507
1992-93	7,893	24,199	24,730	25,754	26,905	10,674	120,155
1993-94	7,823	23,438	24,374	25,454	25,735	10,417	117,241
1994-95	7,725	22,678	23,993	25,046	25,124	10,196	114,763
1995-96	7,577	22,206	23,324	24,957	24,133	9,964	112,162
1996-97	7,421	21,906	22,592	24,596	23,982	9,796	110,292
1997-98	7,239	21,524	21,856	24,211	23,648	9,596	108,073
1998-99	7,045	21,062	21,400	23,535	23,571	9,413	106,025
1999-00	6,841	20,557	21,111	22,794	23,236	9,212	103,751
2000-01	6,650	20,008	20,743	22,052	22,882	8,997	101,332

(Low)

Year	K	1-3	4-6	7-9	10-12	Spec Educ	Total
1990-91	8,670	25,118	25,137	27,735	28,347	10,991	125,998
1991-92	8,262	24,678	24,565	26,595	27,130	10,635	121,864
1992-93	7,886	23,937	24,315	25,315	26,105	10,288	117,846
1993-94	7,815	23,176	23,803	24,788	24,743	9,982	114,308
1994-95	7,581	22,464	23,384	24,228	23,753	9,705	111,115
1995-96	7,317	21,979	22,759	23,981	22,583	9,439	108,059
1996-97	7,098	21,585	22,113	23,474	22,128	9,225	105,624
1997-98	6,885	20,904	21,577	23,061	21,616	8,998	103,040
1998-99	6,612	20,243	21,110	22,446	21,398	8,782	100,591
1999-00	6,414	19,571	20,735	21,803	20,941	8,558	98,023
2000-01	6,221	18,921	20,080	21,279	20,584	8,328	95,413

Table 22 (continued)

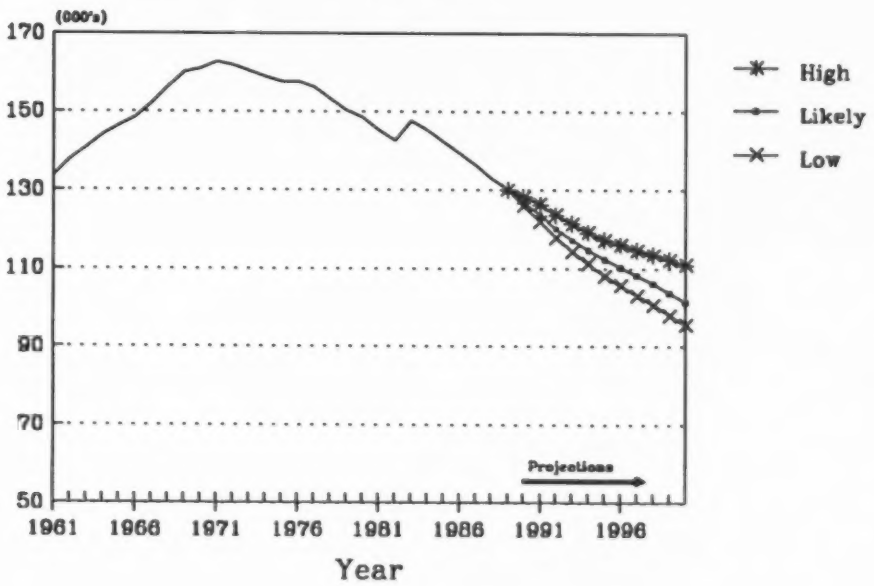
(High)

Year	K	1-3	4-6	7-9	10-12	Spec Educ	Total
1990-91	8,687	25,506	25,349	28,083	28,833	12,307	128,766
1991-92	8,294	25,335	25,067	27,241	28,284	12,074	126,295
1992-93	7,971	24,777	25,150	26,266	27,673	11,827	123,665
1993-94	7,916	24,079	24,999	26,133	26,659	11,612	121,398
1994-95	7,858	23,339	24,830	25,928	25,887	11,407	119,249
1995-96	7,786	22,920	24,287	26,097	24,918	11,212	117,220
1996-97	7,713	22,741	23,603	26,021	24,810	11,089	115,978
1997-98	7,641	22,621	22,875	25,926	24,596	10,956	114,616
1998-99	7,567	22,487	22,463	25,358	24,759	10,847	113,482
1999-00	7,495	22,274	22,364	24,643	24,685	10,725	112,187
2000-01	7,422	22,063	22,246	23,884	24,608	10,597	110,820

Figure 11

Actual and projected enrolments

1961 - 2000



The projected enrolments for individual school districts are presented in Table 23. One of the more striking trends is the continued high rate of decline in enrolment of some of the small rural districts (e.g Notre Dame Integrated, Bay d'Espoir Integrated and Gander-Bonavista-Connaigre Roman Catholic). Yet, it will be the larger districts (e.g. St. John's Roman Catholic, Avalon Consolidated, and Avalon North Integrated) which will experience some of the largest decreases. In either case, large-scale decline brings with it continued uncertainty and apprehension to parents and school officials about the future of their students, staffs, schools or even districts. At the other extreme, the lowest rates of decline will be in districts in which their primary populations are located in dormitory communities of the capital city of St. John's (Conception Bay South Integrated, and Conception Bay Centre Roman Catholic). Eastern Labrador will likely see only marginal declines as well.

These results are graphically illustrated in Figures 12a and 12b which follows. The figures provide maps which display various levels of enrolment decline over the next eleven years for both Integrated and Roman Catholic school districts. From the maps one can readily identify those districts which will undergo the greatest decline and those which will undergo the least.

It is obvious that all educators, from classroom teachers to superintendents, as well as parents and other interested individuals, will have to monitor these changes around them to fully understand and anticipate their effects both provincially and within their particular sphere.

Table 23a

Projected Enrolment by School District, 1990 - 2000

(Most likely)

School District	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
Integrated Districts:						
Vinland-Straits	3637	3541	3426	3314	3215	3128
Deer Lake-St. Barbe	4021	3909	3794	3682	3583	3498
Green Bay	3161	3046	2968	2891	2824	2768
Exploit's Valley	4005	3807	3693	3581	3482	3397
Notre Dame	2954	2792	2692	2595	2509	2433
Terra Nova-Cape Freels	7709	7450	7229	7012	6822	6659
Bonavista-Trinity-Pla.	6255	6155	6002	5852	5721	5612
Avalon North	8683	8376	8151	7930	7738	7574
Avalon Consolidated	11427	11219	10938	10660	10420	10218
Burin Peninsula	3239	3071	2967	2864	2774	2695
Bay d'Espoir	1691	1599	1536	1476	1421	1373
Port aux Basques	2374	2284	2211	2139	2075	2020
Bay of Islands-St. Geo.	6320	6219	6027	5840	5674	5532
Labrador East	2205	2221	2168	2115	2069	2031
Labrador West	1923	1904	1853	1802	1759	1721
Conception Bay South	3480	3554	3495	3436	3388	3351
Roman Catholic Districts:						
Bay St. George	1970	1840	1779	1718	1665	1618
Burin Peninsula	4060	3934	3829	3725	3634	3558
Conception Bay Centre	1665	1675	1653	1629	1611	1598
Conception Bay North	2444	2373	2310	2247	2192	2146
Exploit's-White Bay	2551	2500	2416	2333	2260	2197
Ferryland	2062	2081	2038	1995	1958	1928
Gander-Bonavista-Conn.	2467	2284	2205	2128	2059	1999
Humber-St. Barbe	4016	3884	3775	3668	3575	3496
Labrador	2882	2856	2804	2752	2708	2674
Placentia-St. Mary's	3213	3046	2952	2860	2779	2708
Port au Port	3393	3363	3242	3124	3019	2926
St. John's	19441	19164	18748	18336	17985	17696
Pentecostal Assemblies	6560	6473	6324	6176	6050	5945
Seventh Day Adventist	301	292	284	276	270	264
Provincial Total	**130109**	**126916**	**123507**	**120155**	**117241**	**114763**

Table 23a (continued)

(Most likely)

1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	Difference 1989 to 2000	
						f	%
3040	2971	2894	2822	2745	2665	-972	-26.7
3410	3344	3268	3198	3121	3040	-981	-24.4
2709	2667	2616	2570	2518	2462	-699	-22.1
3309	3243	3167	3096	3019	2939	-1066	-26.6
2355	2294	2226	2163	2096	2027	-927	-31.4
6489	6362	6215	6079	5931	5776	-1933	-25.1
5496	5415	5317	5227	5125	5016	-1239	-19.8
7403	7279	7133	6998	6848	6688	-1995	-23.0
10005	9856	9675	9508	9321	9120	-2307	-20.2
2613	2550	2479	2413	2343	2270	-969	-29.9
1324	1284	1241	1200	1158	1115	-576	-34.1
1963	1919	1870	1824	1774	1723	-651	-27.4
5384	5272	5144	5026	4897	4763	-1557	-24.6
1991	1963	1929	1898	1862	1824	-381	-17.3
1682	1654	1621	1590	1556	1520	-403	-21.0
3309	3287	3253	3223	3185	3141	-339	-9.7
1570	1533	1491	1453	1411	1368	-602	-30.6
3477	3419	3350	3287	3216	3141	-919	-22.6
1581	1575	1563	1552	1538	1520	-145	-8.7
2097	2062	2021	1983	1940	1895	-549	-22.5
2131	2080	2023	1970	1913	1854	-697	-27.3
1896	1875	1848	1824	1795	1763	-299	-14.5
1938	1889	1836	1785	1732	1677	-790	-32.0
3413	3352	3281	3215	3142	3065	-951	-23.7
2636	2614	2583	2555	2521	2483	-399	-13.9
2636	2581	2518	2460	2397	2331	-882	-27.5
2832	2757	2675	2598	2516	2432	-961	-28.3
17385	17183	16924	16688	16413	16112	-3329	-17.1
5832	5757	5663	5577	5478	5371	-1189	-18.1
258	254	249	244	239	233	-68	-22.6
112162	**110292**	**108073**	**106025**	**103751**	**101332**	**-28777**	**-22.1**

Table 23b

Projected Enrolment by School District, 1990 - 2000

(Low)

School District	1990-91	1991-92	1992-93	1993-94	1994-95
Integrated Districts:					
Vinland-Straits	3515	3381	3250	3134	3029
Deer Lake-St. Barbe	3881	3744	3611	3493	3387
Green Bay	3024	2928	2835	2754	2680
Exploit's Valley	3780	3644	3512	3395	3289
Notre Dame	2772	2657	2545	2446	2356
Terra Nova-Cape Freels	7396	7133	6877	6652	6447
Bonavista-Trinity-Pla.	6111	5923	5739	5578	5434
Avalon North	8316	8043	7778	7544	7334
Avalon Consolidated	11138	10792	10455	10160	9894
Burin Peninsula	3049	2927	2809	2705	2609
Bay d'Espoir	1588	1516	1447	1385	1329
Port aux Basques	2268	2181	2098	2023	1956
Bay of Islands-St. Georges	6174	5947	5727	5533	5356
Labrador East	2205	2139	2074	2018	1967
Labrador West	1890	1828	1768	1715	1667
Conception Bay South	3528	3449	3370	3304	3245
Roman Catholic Districts:					
Bay St. George	1827	1755	1685	1623	1567
Burin Peninsula	3906	3778	3653	3544	3445
Conception Bay Centre	1663	1631	1598	1571	1547
Conception Bay North	2356	2279	2204	2138	2078
Exploit's-White Bay	2482	2384	2289	2204	2127
Ferryland	2066	2011	1956	1909	1867
Gander-Bonavista-Connaigre	2268	2176	2087	2008	1936
Humber-St. Barbe	3856	3725	3598	3486	3385
Labrador	2835	2766	2699	2641	2589
Placentia-St. Mary's	3024	2913	2805	2709	2622
Port au Port	3339	3199	3064	2943	2833
St. John's	19026	18499	17983	17535	17134
Pentecostal Assemblies	6426	6239	6057	5898	5756
Seventh Day Adventist	290	280	271	263	256
Provincial Total	**125998**	**121864**	**117846**	**114308**	**111115**

[a]1989-90 data included in Table 23a.

Table 23b (continued)

(Low)

1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	Difference 1989* to 2000	
						f	%
2928	2846	2759	2678	2594	2509	-1128	-31.0
3285	3203	3116	3034	2949	2862	-1159	-28.8
2610	2554	2495	2438	2379	2319	-842	-26.7
3188	3105	3019	2937	2852	2767	-1238	-30.9
2269	2197	2123	2052	1980	1908	-1046	-35.4
6251	6092	5926	5768	5604	5439	-2270	-29.5
5295	5186	5070	4959	4842	4723	-1532	-24.5
7132	6971	6801	6639	6470	6297	-2386	-27.5
9639	9439	9224	9021	8806	8587	-2840	-24.9
2518	2442	2364	2289	2213	2137	-1102	-34.0
1275	1229	1183	1139	1094	1050	-641	-37.9
1891	1838	1783	1730	1676	1622	-752	-31.7
5187	5049	4905	4768	4627	4484	-1836	-29.0
1918	1880	1839	1801	1760	1717	-488	-22.1
1621	1584	1546	1509	1470	1431	-492	-25.6
3188	3148	3102	3058	3009	2958	-522	-15.0
1513	1468	1422	1378	1333	1288	-682	-34.6
3350	3274	3194	3118	3039	2958	-1102	-27.1
1524	1508	1490	1473	1453	1431	-234	-14.0
2021	1975	1927	1881	1833	1784	-660	-27.0
2053	1992	1929	1869	1808	1746	-805	-31.6
1826	1796	1762	1730	1696	1660	-402	-19.5
1867	1809	1750	1694	1636	1579	-888	-36.0
3288	3210	3128	3050	2969	2886	-1130	-28.1
2539	2503	2463	2424	2382	2338	-544	-18.9
2539	2472	2401	2334	2264	2194	-1019	-31.7
2728	2641	2550	2464	2377	2290	-1103	-32.5
16749	16456	16136	15833	15507	15171	-4270	-22.0
5619	5514	5399	5291	5176	5057	-1503	-22.9
249	243	237	231	225	219	-82	-27.1
108059	**105624**	**103040**	**100591**	**98023**	**95413**	**-34696**	**-26.7**

Table 23c

Projected Enrolment by School District, 1990 - 2000

(High)

School District	1990-91	1991-92	1992-93	1993-94	1994-95
Integrated Districts:					
Vinland-Straits	3593	3503	3411	3329	3251
Deer Lake-St. Barbe	3966	3880	3789	3710	3635
Green Bay	3090	3035	2975	2924	2876
Exploit's Valley	3863	3776	3685	3606	3530
Notre Dame	2833	2753	2671	2598	2528
Terra Nova-Cape Freels	7559	7392	7217	7064	6919
Bonavista-Trinity- Pla.	6245	6138	6022	5924	5831
Avalon North	8499	8335	8162	8012	7870
Avalon Consolidated	11383	11185	10972	10790	10618
Burin Peninsula	3116	3034	2948	2872	2800
Bay d'Espoir	1622	1571	1519	1471	1426
Port aux Basques	2318	2261	2201	2149	2099
Bay of Islands-St. Georges	6310	6163	6010	5876	5748
Labrador East	2253	2216	2177	2143	2111
Labrador West	1931	1894	1855	1821	1789
Conception Bay South	3605	3574	3537	3508	3482
Roman Catholic Districts:					
Bay St. George	1867	1819	1768	1724	1681
Burin Peninsula	3992	3915	3834	3763	3697
Conception Bay Centre	1700	1690	1677	1668	1660
Conception Bay North	2408	2362	2313	2270	2230
Exploit's-White Bay	2537	2470	2402	2341	2282
Ferryland	2112	2084	2053	2027	2003
Gander-Bonavista-Connaigre	2318	2255	2190	2132	2077
Humber-St. Barbe	3940	3860	3775	3702	3632
Labrador	2897	2867	2832	2804	2779
Placentia-St. Mary's	3090	3018	2943	2877	2814
Port au Port	3412	3315	3215	3126	3041
St. John's	19444	19172	18871	18622	18388
Pentecostal Assemblies	6567	6466	6356	6264	6177
Seventh Day Adventist	296	290	284	279	274
Provincial Total	**128766**	**126295**	**123665**	**121398**	**119249**

*1989-90 data included in Table 23a.

Table 23c (continued)

(High)

1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	Difference 1989[a] to 2000	
						f	%
3177	3124	3069	3021	2968	2915	-722	-19.9
3563	3516	3466	3423	3375	3325	-696	-17.3
2831	2804	2775	2751	2723	2693	-468	-14.8
3458	3410	3358	3314	3265	3214	-791	-19.8
2462	2412	2361	2315	2266	2216	-738	-25.0
6781	6690	6592	6507	6414	6317	-1392	-18.1
5744	5695	5639	5595	5542	5486	-769	-12.3
7737	7655	7565	7490	7404	7314	-1369	-15.8
10456	10364	10260	10177	10079	9974	-1453	-12.7
2731	2681	2629	2583	2533	2482	-757	-23.4
1383	1350	1316	1285	1252	1219	-472	-27.9
2051	2018	1983	1952	1918	1884	-490	-20.6
5627	5544	5456	5379	5295	5209	-1111	-17.6
2081	2064	2046	2031	2014	1995	-210	-9.5
1758	1740	1719	1702	1683	1662	-261	-13.6
3458	3456	3450	3450	3444	3435	-45	-1.3
1641	1612	1582	1555	1526	1496	-474	-24.1
3634	3595	3553	3518	3478	3435	-625	-15.4
1653	1656	1657	1661	1663	1662	-3	-0.2
2192	2169	2143	2122	2098	2072	-372	-15.2
2227	2187	2146	2108	2069	2028	-523	-20.5
1981	1972	1960	1952	1941	1928	-134	-6.5
2025	1987	1947	1911	1873	1834	-633	-25.7
3566	3525	3479	3441	3398	3352	-664	-16.5
2755	2749	2739	2735	2726	2715	-167	-5.8
2755	2714	2671	2633	2592	2549	-664	-20.7
2960	2899	2837	2780	2721	2660	-733	-21.6
18169	18069	17949	17862	17748	17620	-1821	-9.4
6095	6054	6006	5969	5923	5873	-687	-10.5
270	267	264	261	258	255	-46	-15.3
117220	**115978**	**114616**	**113482**	**112187**	**110820**	**-19289**	**-14.8**

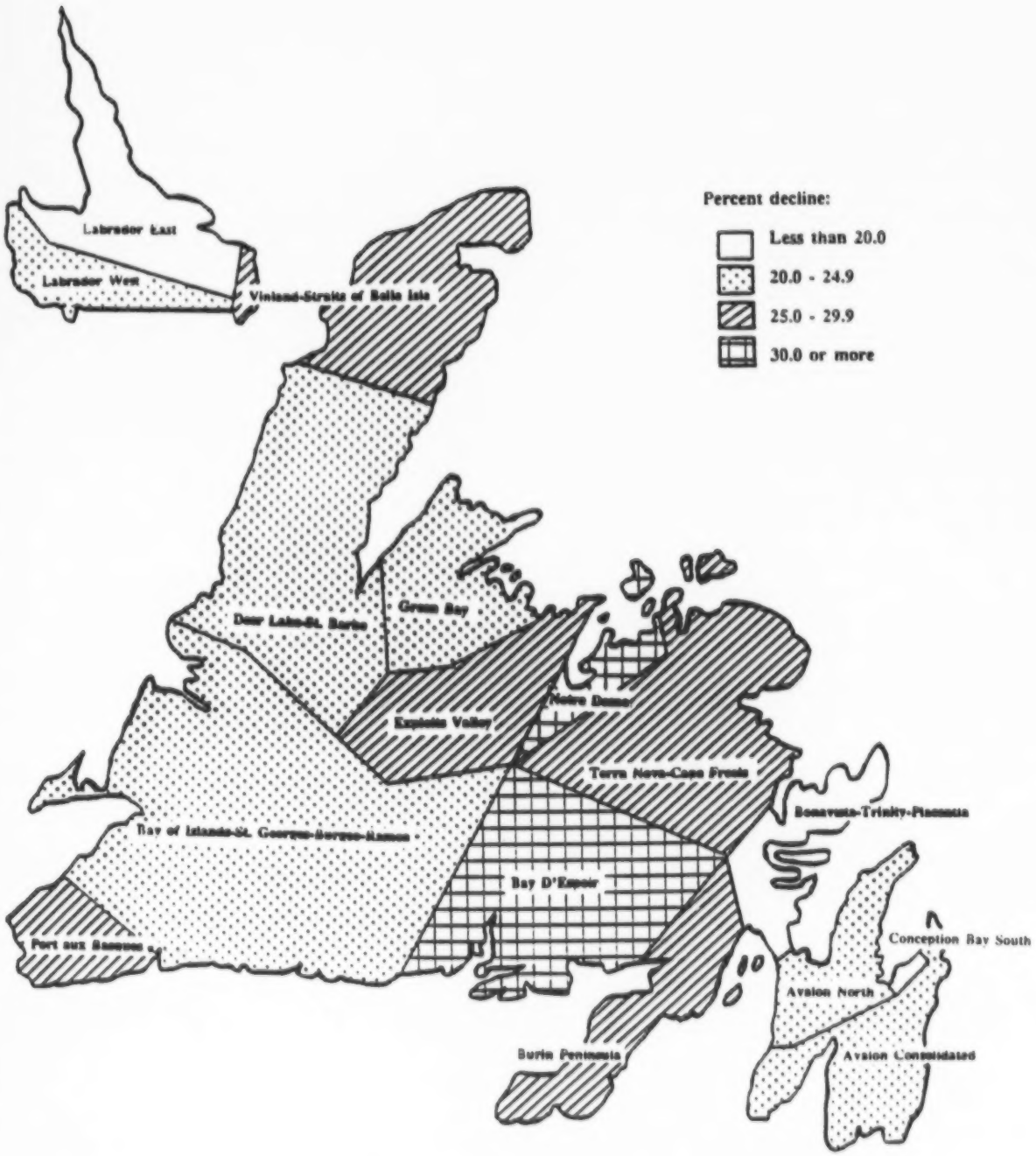


Figure 12a. Projected decline in enrolment from 1989-90 to 2000-01, Integrated school districts, most likely scenario.

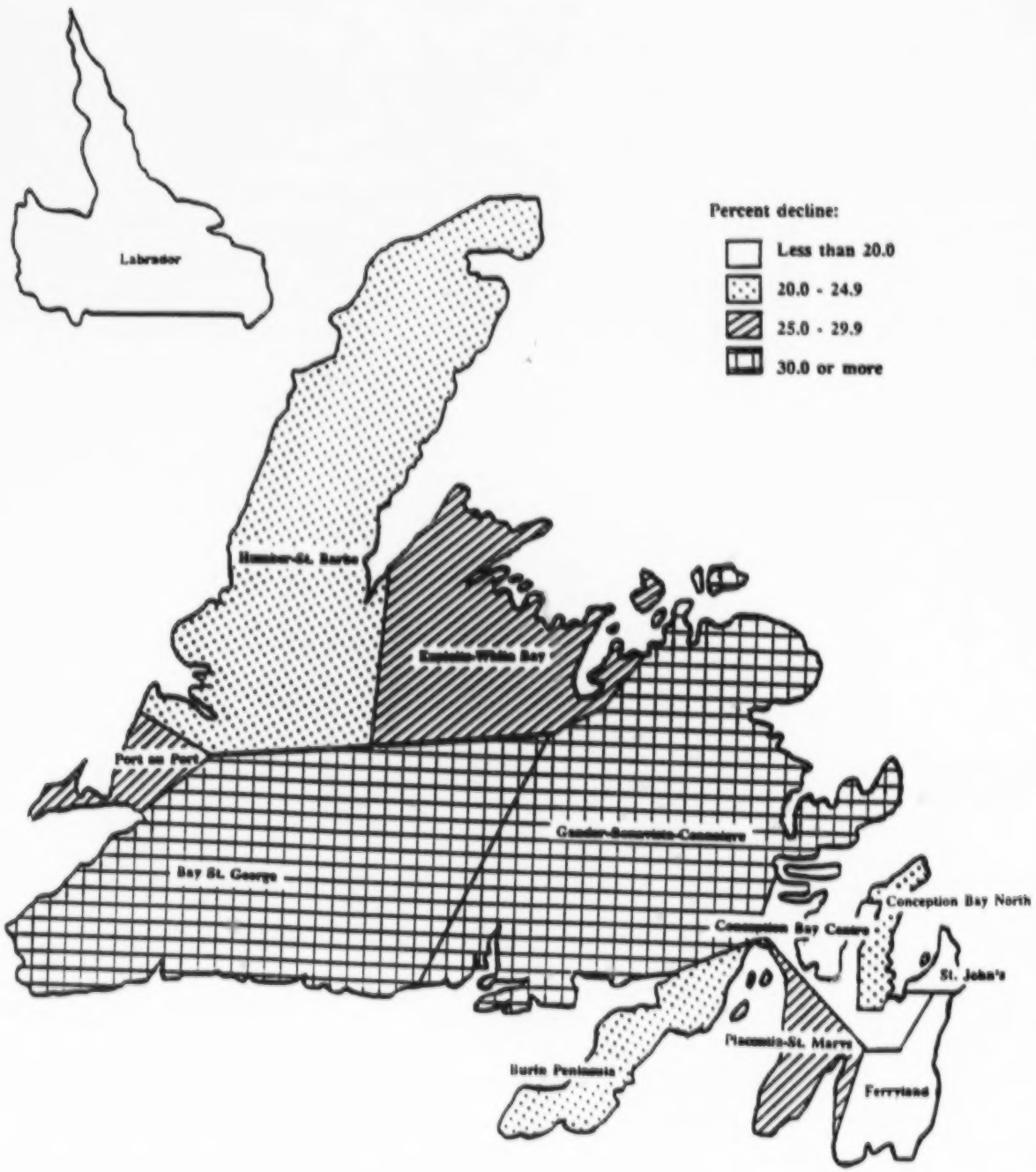


Figure 12b. Projected decline in enrolment from 1989-90 to 2000-01, Roman Catholic school districts, most likely scenario.

The low projection shows enrolment declining to 95,413 students. The average rate of decline will be 26.7% with districts falling within a range of -37.9% and -14.0%. The high projection shows enrolment declining to 110,820 students. The average rate of decline will be 14.8% with districts falling within a range of -27.9% and -0.2%.

Personnel

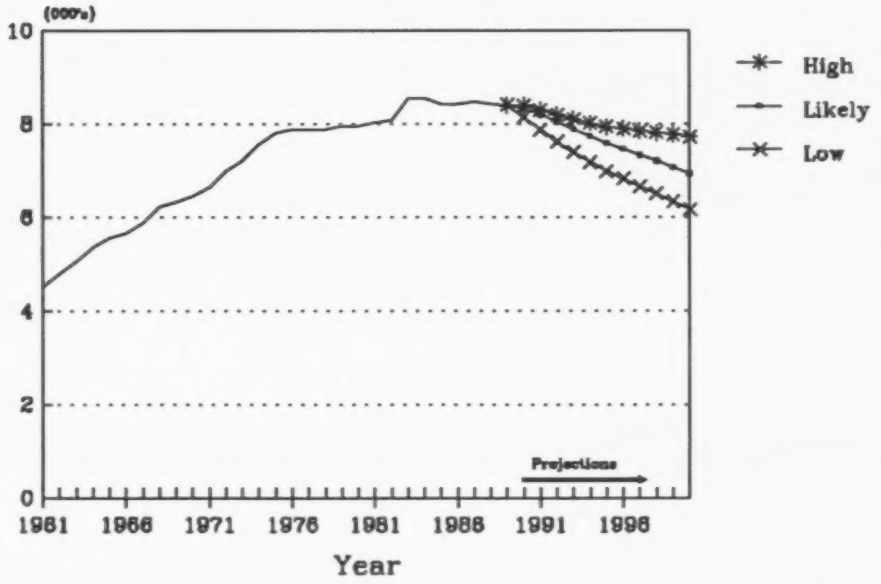
Projections of the size of the teacher workforce are influenced primarily by two factors: demographic conditions, and policy decisions. While other factors such as personal circumstances and economic conditions come into play as well they do not have the same impact on the size of the workforce. If enrolments drop to the expected levels, almost certainly there will be a concomitant drop in the number of teachers. One factor which could affect the size of the drop is policy. As has been the case in the past, the next decade will likely see government intervene in some way to utilize the decline in enrolments to introduce new policies and programs, thereby altering the size of the teacher workforce. In an attempt to measure the extent to which such policy intervention will affect the size of the workforce, the following assumptions were developed:

> *Most likely - The current allocation formula will remain in effect.*
>
> *Low - The current allocation policies which shield school districts against enrolment declines will discontinue.*
>
> *High - When the current allocation formula ends in 1991-92, it will be replaced with a similar assistance plan which will remain in effect until the end of the projection period.*

Given these circumstances, the full-time equivalent teacher workforce is projected to decline from its 1989-90 level of 8,399 teachers to 6,928 by the end of the projection period. This amounts to a loss of 1,470 teachers (17.5%). The average age of teachers will

increase from 39.4 years in 1989 to 43.5 years in 2000. The extent of the potential loss of teachers, utilizing low, most likely and high scenarios, is illustrated in Figure 13.

Figure 13
Actual and projected teachers
1961 - 2000



The projected number of teachers by school district is presented in Table 24. Although the greatest losses will be in larger districts (e.g. St. John's Roman Catholic, Avalon Consolidated, and Terra Nova-Cape Freels Integrated), 22 of 30 school districts (73.3%) will experience rates of decline higher than the provincial average. Once again the lowest rates of decline will be in Conception Bay South Integrated and Conception Bay Centre Roman Catholic.

The low projection shows a workforce declining to 6,159 teachers. The average rate of decline will be 26.7% with districts falling within a range of -36.0% and -14.0%. The high projection shows a workforce declining to 7,714 teachers. The average rate of decline will be 8.1% with districts falling within a range of -15.1% and +0.2%.

Table 24a

Projected Teachers by School District, 1990 - 2000

(Most likely)

School District	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
Integrated Districts:						
Vinland-Straits	273	270	266	261	256	250
Deer Lake-St. Barbe	289	283	278	272	267	261
Green Bay	220	218	215	211	207	203
Exploit's Valley	280	274	269	264	258	253
Notre Dame	216	212	207	203	199	195
Terra Nova-Cape Freels	519	510	500	490	481	471
Bonavista-Trinity-Pla.	372	370	367	359	352	345
Avalon North	530	522	515	505	495	485
Avalon Consolidated	666	659	651	638	625	613
Burin Peninsula	217	214	210	206	202	198
Bay d'Espoir	138	136	135	132	129	127
Port aux Basques	151	149	147	144	141	138
Bay of Islands-St. Geo	398	395	390	382	374	367
Labrador East	183	184	181	177	173	170
Labrador West	122	121	118	116	114	111
Conception Bay South	208	214	213	209	206	204
Roman Catholic Districts:						
Bay St. George	138	135	132	129	127	124
Burin Peninsula R.C.	269	266	263	257	252	247
Conception Bay Centre	104	106	105	104	103	102
Conception Bay North	156	154	152	149	146	143
Exploit's-White Bay	180	177	173	170	166	163
Ferryland	131	133	132	129	127	125
Gander-Bonavista-Con.	173	169	166	163	159	156
Humber-St. Barbe	263	258	253	248	243	238
Labrador	216	214	210	206	203	200
Placentia-St. Mary's	215	212	210	206	202	198
Port au Port	243	241	236	231	227	222
St. John's	1081	1075	1064	1042	1022	1006
Pentecostal Assemblies	420	418	414	406	397	391
Seventh Day Adventist	29	28	28	27	27	26
Total Province	**8399**	**8316**	**8198**	**8035**	**7879**	**7733**

Table 24a (continued)

(Most likely)

1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	Difference 1989 to 2000	
						f	%
245	241	236	231	226	222	-51	-18.7
256	251	246	241	236	232	-57	-19.9
199	195	192	188	185	181	-39	-17.8
248	243	238	233	229	224	-56	-19.9
191	188	184	180	176	173	-43	-19.9
462	453	443	435	426	417	-102	-19.6
339	334	328	322	316	309	-63	-16.8
475	467	458	449	440	431	-99	-18.6
601	592	581	571	560	548	-118	-17.7
194	190	186	183	179	175	-42	-19.2
124	122	119	117	114	112	-26	-18.7
136	133	130	128	125	123	-28	-18.8
359	352	345	338	332	325	-73	-18.4
167	165	162	159	156	153	-30	-16.4
109	107	105	103	101	99	-23	-18.7
202	200	198	196	194	191	-17	-8.0
122	119	117	115	112	110	-27	-19.9
242	238	233	229	224	220	-49	-18.3
101	100	99	99	98	97	-7	-7.0
140	138	135	132	130	127	-29	-18.5
160	156	153	150	147	144	-36	-19.9
123	121	119	118	116	114	-17	-13.0
153	150	147	144	141	138	-34	-19.9
233	229	224	220	215	211	-52	-19.7
198	196	194	192	189	186	-30	-13.9
194	190	186	182	179	175	-39	-18.4
218	213	209	205	201	197	-46	-19.0
988	977	962	949	933	916	-165	-15.2
383	378	372	366	360	353	-67	-15.9
26	25	25	24	24	23	-6	-19.6
7585	**7463**	**7328**	**7199**	**7065**	**6928**	**-1470**	**-17.5**

Table 24b

Projected Teachers by School District, 1990 - 2000

(Low)

School District	1990-91	1991-92	1992-93	1993-94	1994-95
Integrated Districts:					
Vinland-Straits	264	254	244	235	227
Deer Lake-St. Barbe	279	269	260	251	243
Green Bay	210	204	197	192	187
Exploit's Valley	264	255	246	237	230
Notre Dame	203	194	186	179	172
Terra Nova-Cape Freels	498	480	463	448	434
Bonavista-Trinity-Pla.	363	352	341	332	323
Avalon North	508	491	475	460	448
Avalon Consolidated	649	629	609	592	577
Burin Peninsula	204	196	188	181	175
Bay d'Espoir	130	124	118	113	108
Port aux Basques	144	139	133	129	124
Bay of Islands-St. Georges	389	375	361	348	337
Labrador East	183	177	172	167	163
Labrador West	120	116	112	109	106
Conception Bay South	211	206	201	197	194
Roman Catholic Districts:					
Bay St. George	128	122	118	113	109
Burin Peninsula	259	251	242	235	228
Conception Bay Centre	104	102	100	98	97
Conception Bay North	150	145	141	136	133
Exploit's-White Bay	175	168	162	156	150
Ferryland	131	128	124	121	119
Gander-Bonavista-Connaigre	159	152	146	141	136
Humber-St. Barbe	252	244	236	228	222
Labrador	212	207	202	198	194
Placentia-St. Mary's	202	194	187	181	175
Port au Port	239	229	219	211	203
St. John's	1057	1028	999	975	952
Pentecostal Assemblies	411	399	388	377	368
Seventh Day Adventist	28	27	26	25	25
Provincial Total	**8133**	**7866**	**7607**	**7379**	**7172**

*1989-90 data included in Table 24a.

Table 24b (continued)

(Low)

1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	Difference 1989[a] to 2000	
						f	%
220	214	207	201	195	188	-85	-31.0
236	230	224	218	212	206	-83	-28.8
182	178	174	170	166	161	-59	-26.7
223	217	211	205	199	193	-87	-30.9
166	161	155	150	145	140	-76	-35.4
421	410	399	388	377	366	-153	-29.5
315	308	301	295	288	281	-91	-24.5
435	426	415	405	395	384	-146	-27.5
562	550	538	526	513	500	-166	-24.9
169	164	158	153	148	143	-74	-34.0
104	100	97	93	89	86	-52	-37.9
120	117	113	110	107	103	-48	-31.7
327	318	309	300	291	282	-116	-29.0
159	156	153	149	146	143	-40	-22.1
103	101	98	96	93	91	-31	-25.6
191	188	185	183	180	177	-31	-15.0
106	102	99	96	93	90	-48	-34.6
222	217	212	207	202	196	-73	-27.1
95	94	93	92	91	89	-15	-14.0
129	126	123	120	117	114	-42	-27.0
145	141	136	132	128	123	-57	-31.6
116	114	112	110	108	105	-26	-19.5
131	127	123	119	115	111	-62	-36.0
215	210	205	200	194	189	-74	-28.1
190	188	185	182	179	175	-41	-18.9
170	165	160	156	151	147	-68	-31.7
195	189	183	177	170	164	-79	-32.5
931	915	897	880	862	843	-237	-22.0
360	353	345	339	331	324	-96	-22.9
24	23	23	22	22	21	-8	-27.1
6975	**6818**	**6651**	**6493**	**6327**	**6159**	**-2240**	**-26.7**

Table 24c

Projected Teachers by School District, 1990 - 2000

(High)

School District	1990-91	1991-92	1992-93	1993-94	1994-95
Vinland-Straits	272	268	264	261	257
Deer Lake-St. Barbe	285	279	275	272	268
Green Bay	218	216	213	210	208
Exploit's Valley	274	269	265	261	258
Notre Dame	213	209	207	204	201
Terra Nova-Cape Freels	510	501	494	487	480
Bonavista-Trinity-Pla.	375	373	368	364	361
Avalon North	522	515	508	502	496
Avalon Consolidated	668	662	653	646	640
Burin Peninsula	214	210	207	205	202
Bay d'Espoir	136	135	133	131	129
Port aux Basques	149	147	145	143	141
Bay of Islands-St. Georges	400	395	390	384	379
Labrador East	187	184	182	180	178
Labrador West	123	120	119	117	116
Conception Bay South	217	218	217	216	216
Roman Catholic Districts:					
Bay St. George	135	132	130	128	127
Burin Peninsula	267	264	260	257	254
Conception Bay Centre	107	108	107	107	108
Conception Bay North	155	153	151	149	147
Exploit's-White Bay	179	176	173	171	168
Ferryland	135	134	133	132	132
Gander-Bonavista-Conn	169	166	164	161	159
Humber-St. Barbe	258	253	249	246	243
Labrador	217	215	214	213	212
Placentia-St. Mary's	212	210	207	204	201
Port au Port	244	239	236	233	230
St. John's	1091	1085	1075	1067	1060
Pentecostal Assemblies	424	422	417	414	410
Seventh Day Adventist	29	28	28	27	27
Provincial Total	**8386**	**8286**	**8183**	**8093**	**8006**

[a]1989-90 data included in Table 24a.

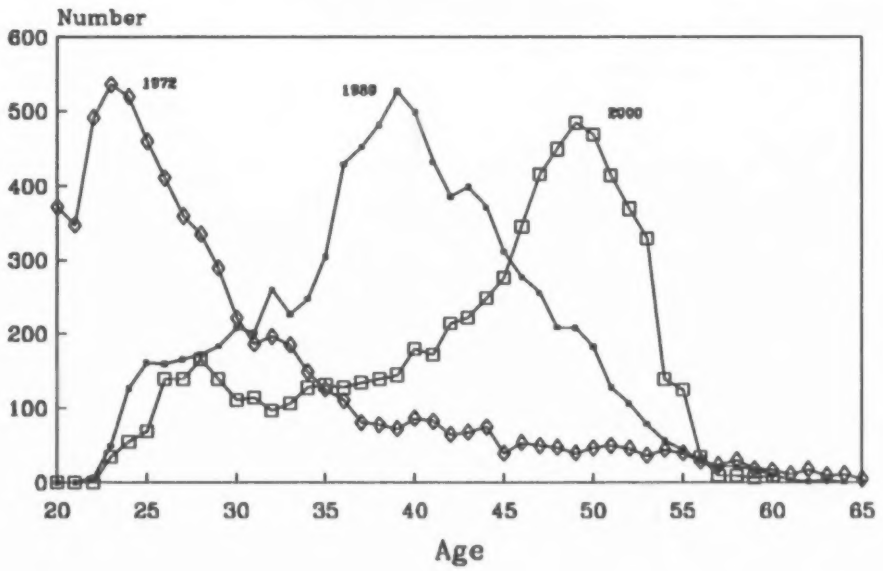
Table 24c (continued)

(High)

1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	Difference 1989[a] to 2000	
						f	%
254	251	248	246	243	240	-33	-12.1
264	262	260	258	256	254	-35	-12.1
206	205	205	204	203	202	-18	-8.1
254	252	250	248	246	244	-36	-13.0
198	195	192	190	187	185	-31	-14.5
473	470	466	463	459	455	-64	-12.4
358	357	355	355	354	352	-20	-5.3
491	488	486	484	481	478	-52	-9.8
634	632	630	628	626	623	-43	-6.4
199	196	194	192	189	186	-31	-14.1
127	125	124	122	120	119	-19	-14.1
139	138	136	135	133	132	-19	-12.9
374	370	367	364	360	357	-41	-10.4
177	177	176	176	175	175	-8	-4.4
114	114	113	113	112	112	-10	-8.6
216	217	218	219	220	221	13	6.2
125	123	122	120	119	117	-20	-14.7
251	250	248	247	246	245	-25	-9.2
108	109	109	110	111	112	8	7.4
145	145	144	143	143	142	-14	-9.2
166	164	162	160	158	156	-24	-13.5
131	131	131	131	131	131	0	0.0
157	155	153	151	149	147	-26	-15.1
240	239	237	236	234	232	-31	-11.6
212	212	213	214	214	215	-1	-0.5
198	197	195	193	191	189	-25	-11.7
226	223	220	217	214	211	-32	-13.2
1054	1055	1054	1055	1055	1054	-27	-2.5
407	407	406	406	406	405	-15	-3.6
27	27	26	26	26	26	-3	-10.5
7925	**7886**	**7839**	**7807**	**7763**	**7714**	**-684**	**-8.1**

While prediction of the size of the teacher workforce may be influenced by such factors as demographic conditions and policy decisions, predictions of the composition of the workforce are largely the result of collective agreements, economic conditions, or personal circumstances. When a system is in contraction, such as the workforce currently is, fewer leave for fear of not being able to return. The majority that are lost reside at both ends; young less experienced teachers who, because of seniority, are the first to go and older experienced teachers of retirement age. The result is that the bulge of teachers, currently in the 35-45 age range, gets disproportionately larger; that is the distribution becomes leptokurtic. The projected distribution of teachers, using the most likely scenario, is illustrated in Figure 14.

Figure 14
The changing teacher workforce
1972, 1989, 2000



The year 2000-01 shows a unique negatively skewed distribution - unique in that one would not expect such a distribution to maintain itself for very long in any large organization since it has severe consequences for recruiting, training and deployment, not to mention the stability of the organization itself. The period following the year 2000-01 will be marked by large numbers of out-going teachers and rising numbers of in-coming teachers.

Outputs. As the teacher workforce contracts, further contributing to its static nature, the number who withdraw for reasons other than retirement will decline further. While the majority of terminations will be young less experienced teachers, there will be some older experienced teachers from urban areas terminated as well. In the latter instance, as individual schools contract even further, as the opportunities to move diminish and as the pressures and strain of teaching grows even greater, then each year increased numbers of experienced teachers will be terminated.

Those that leave by choice will do so for a number of reasons, but for the purposes of this study they are divided into two groups: permanent (e.g. resignation, retirement, death) and temporary (e.g. long-term leave, temporary employment, further schooling). Admittedly, considerable overlap exists between the two groups as they are largely determined by personal preference and individual circumstances - some, after a temporary leave, may choose not to return.

Projecting the number of teachers expected to retire from the workforce in the coming decade is a risky business at best. Some knowledge of the general attitude of teachers toward teaching, their personal circumstances, their ambitions, and their plans, is required. Without such knowledge, assumptions must be generated based on past data and current circumstances. To project retirements, the following assumptions were made:

1. *This is a workforce characterized by young starters. Most started teaching at a young age and will have completed 30 years service on or before reaching 55 years of age.*

2. *As the stress of teaching increases, more teachers will retire at first available opportunity. By 1995, 90% of teachers will have retired on or before the age of 55. The rate will stabilize at that level.*

As shown in Figure 15, there will be an exponential rise in retirements during the next decade, peaking in the year 2002. The unusual jump in retirements in 1989 and 1990, due to the early retirement program, is not expected to continue. Also provided is projected cumulative retirements, using 1980 as the base year. It shows the general pattern of retirements during the lifetime of the current workforce. The most critical period will be between 1997 and 2007, when the largest numbers will be leaving the system.

Figure 15
Projected retirements
1980 - 2015

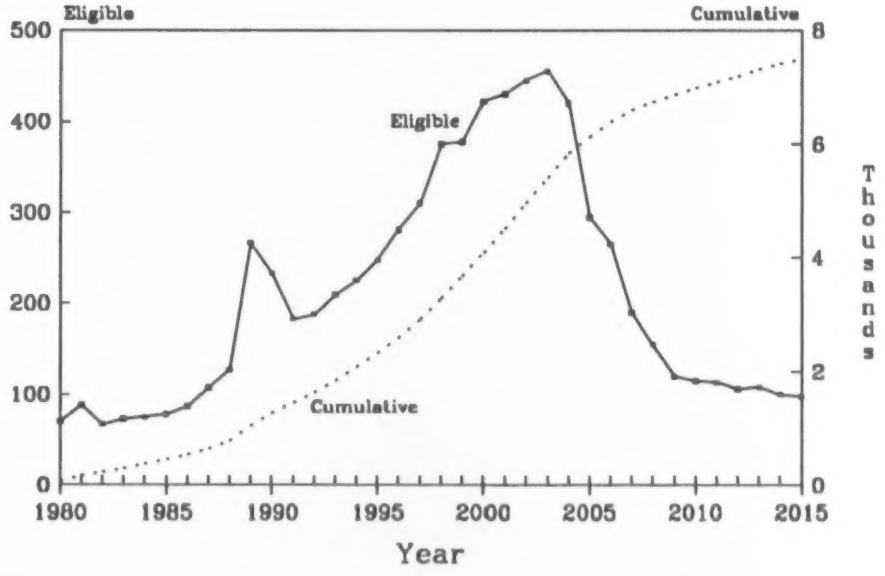


Table 25 presents the projected teacher withdrawals, including retirements, and acquisitions to the end of this century. The projections were based on the following assumptions:

1. *As the opportunities for promotion or transfer decline in this province yet grow elsewhere, the number of teachers seeking teaching opportunities outside the province will increase. Since many of the importing school districts actively recruit at universities and teachers' colleges rather than from other school districts, most individuals who will avail of such opportunities will be young, newly certified teachers rather than older, more settled members of the workforce.*

2. *As the workforce continues to age and more teachers obtain maximum or, at least, their desired qualifications, the number of teachers returning for further study will decrease. However, the demand for paid leave, especially those living a considerable distance from the university campus, is not expected to decline.*

3. *Unless there is a major change in the economic climate of the province, the number of teachers leaving for non-teaching occupations will decrease.*

4. *Given the temporary loss of income on the one hand and the desire for leave from teaching on the other, the number of teachers availing of the Deferred Salary Leave Plan will remain unchanged.*

5. *Since teaching for women has become a means of economic opportunity, the number of female teachers leaving to pursue family opportunities or to assume child care responsibilities will decrease.*

A notable trend is the decline in teachers leaving the system for reasons other than retirement. However, this decline will be more than offset by the increase in retirements which are expected to continue for several years beyond the year 2000. Withdrawals, therefore, while declining for much of the 1990s, will begin to rise by the year 1998; a rise that will likely continue until the year 2010.

Table 25

Projected Withdrawals and Acquisitions, 1990 - 2000

	Withdrawals			
Year	Retirees	Others	Total	Acquisitions
1990-91	233	324	557	516
1991-92	183	358	541	451
1992-93	188	334	522	402
1993-94	209	303	512	370
1994-95	225	278	503	333
1995-96	247	238	485	303
1996-97	281	197	478	284
1997-98	310	142	452	286
1998-99	375	115	490	310
1999-00	378	110	488	332
2000-01	422	113	535	346

A similar pattern is projected for teacher acquisitions. The number of teachers acquired from outside the workforce is projected to decline from its current level of 500 teachers per year to 284 teachers per year by 1996.

Demand

The demand for teachers is essentially a derived demand; based upon the overall demand for teaching. It is a function of many determinants only one of which is the fact that students in schools need teachers. How many, what kinds and where there they should be located are all part of the framework from which demand is determined. Further

complicating the equation are variables not easily measured, such as the average time spent in school, the nature of the curriculum, the quality of teaching, the availability of courses, the availability of services and resources, the students themselves, and the teaching methodologies followed.

Teacher demand has two components: demand caused by expansion of the system (those needed to respond to increased enrolments and improved teacher/pupil ratios), and demand caused by replacement (those needed to respond to teacher turnover). Demand then can be described, in an operational context, as the filling and unfilling of positions in the teacher workforce resulting from demographic conditions, personal circumstances, and policy considerations. What the data presented so far fail to show is perhaps more significant than what they show. They beg two important questions: *"How much of that demand will be filled from within the workforce?"* and *"In what locations, subjects and specialties will demand be greatest?"*

Predicted so far have been provincial trends. Demand for teachers, however, varies by geographic location (different school districts experience different rates of teacher turnover), and also by subject or specialty area. Additional data were therefore collected and examined. Several sources were used: (1) findings from a 1987 study in which all vacancies and hirings for the 1985-86 school year were examined (Press), and (2) findings from two studies (1987-88 and 1988-89) by the Department of Education in which school district personnel were interviewed about the changing demand for teachers and the ease or difficulty they had experienced in filling vacancies. In each case, all school districts responded. Copies of the survey instruments are presented in Appendix B.

Geographic demand. A series of factors influence the number of vacancies in the school system. Quite apart from the obvious influences like changing enrolments or the introduction of new programs, vacancies result from teachers leaving for other teaching positions, for upgrading or to extricate themselves from the system altogether. Little data have been collected on the personal, economic or social reasons as to why teachers leave; why teachers seek positions in some locations and not in others; why some prefer to work in isolated communities; or, what prompts individuals to return to their childhood home to teach. Without answers to these questions and others, conclusions about the nature and causes of demand, cannot be drawn.

Data have been collected on where the vacancies have occurred over the last several years. Different regions of the province have different degrees of attractiveness which, in turn, influences their ability to attract and retain qualified teachers and to replace those who leave. Factors, such as accessibility to the area, the availability of services, distances to services and the conditions of the roads [if any], and the economic stability of the region, affect the demand for teachers.

Over the last several years data have been collected through questionnaires, telephone surveys and personal interviews. Enough information is currently available to understand, in general terms, what has been happening in different parts of the province and in different subject/specialty areas and to draw conclusions about their effects. The findings show that the teacher workforce, characterized in the past by expansion and high turnover, is quickly reversing that pattern and is now characterized by contraction and low turnover. While each year vacancies arise throughout the province, the total number is diminishing.

While many of the large metropolitan areas such as St. John's, Corner Brook and

Gander, had high numbers of vacancies, most resulted from teachers moving within the same district. Frequently a ripple effect occurs - as one teacher is promoted or leaves the system, two or more transfers result. Because the opportunities to leave teaching are no longer readily available, teachers look for opportunities to change their environment. More specifically they will try and change schools to improve their location (closer to home), to work in a school with a more favourable reputation (principal, staff, program), or to improve their assignment (grade, course load, duty, or other responsibilities). While many teachers in rural communities wait for and seek opportunities in urban centres or in the larger towns of their district, many urban teachers see themselves at the end of a road with the only opportunities involving a move within the district.

When vacancies become available in urban areas and are advertised externally the competition for them is quite fierce thus presenting logistical problems for employers. One district reported having over 800 applications for 35 jobs. For most, however, there were large numbers of applications for certain jobs and low numbers for others.

While urban districts are characterized by teachers moving, rural districts are characterized by teachers leaving. Vacancy rates were generally higher in rural, coastal regions of the province, particularly along the Labrador coast, the Great Northern Peninsula and the south coast. For example, school districts in Labrador - all or part of five districts bordering there - consistently had the highest vacancy rates. In fact, some superintendents have had to deal with complete turnovers and others have been even less lucky having to recruit new teachers after only several weeks. Even though the vacancy rates are higher, they have declined in recent years and will continue to do so. As the opportunities to teach in urban areas decline, there is a parallel decline in opportunities to leave rural areas.

Subject/specialty demand. In the past, vacancies resulted from teachers leaving and from new positions being created. Today, most vacancies are the result of losses from the education system. As the majority of teachers leave their jobs to seek new opportunities, there is little relationship between the size of this group and the type of jobs being vacated. However, there is evidence certain areas (e.g. French immersion, music, special education) are being vacated at higher rates than others. One has to be careful not to describe demand as being synonymous with vacancies, one has to consider other factors which contribute to the filling of positions. For example, if the number of applicants for a particular job is limited, less qualified, or inexperienced, then the probability of that job becoming vacant at some date is relatively high assuming little change in the supply of teachers.

To address this concern, subject/specialty areas were examined using three criteria: (1) the number of vacancies, (2) the choice of candidates (number, quality and experience), and (3) the degree of difficulty in filling positions (recruitment). Admittedly, this is a subjective assessment of demand and there is less data available than would be desirable in order to derive quantitative judgements, nevertheless, there is clear evidence of specific trends.

The subject/specialty areas have been ranked according to three groupings: high demand, moderate demand and low demand areas. [It should be noted that high demand exists only in relation to the other two categories. It does not imply a high overall demand in those areas and, in fact, demand in relation to other constituencies may be quite low.] The findings are presented in Table 26.

The largest growth over the years has been in the area of French programs. The reasons have to do with expansion of the French immersion programs in a number of

locations and an honest effort by districts to hire qualified French teachers for core French. For the most part, the supply of French teachers has not kept up with demand and as a result, most districts have indicated difficulty in getting sufficient numbers of qualified candidates for the available positions.

Table 26

Rankings of Subject/specialty Areas.

Subject/specialty area[a]
High demand:
Core French
French immersion
Guidance
Music
Special education - low incidence
Special education - regular
Moderate demand:
English
Home economics
Library/resources
Mathematics
Science
Low demand:
Art
Family studies
Industrial education
Physical education
Religious studies
Social studies

[a]No attempt was made to rank within groupings.

Special education has also been an area in demand - in regular special education because of teacher turnover, and in low-incidence specialties, such as TMH, multi-handicapped, and behaviorally disturbed, because of new programs being identified and developed by school districts. It should be noted that some of the demand in this area is due to districts encouraging teachers not trained in special education to go into the regular classroom so that they can be replaced with qualified teachers.

Guidance is currently in demand because of recent policy changes providing for the allocation of more units; however, it is unlikely this will continue as districts recruit the maximum allowed under the regulations.

Music is in this category, not so much because of the number of available positions but because of the difficulties of recruiting and retaining qualified teachers. Some respondents in rural districts reported a number of music teachers had moved to urban centres thus creating exigencies in recruiting qualified practitioners. Part of the reason may be that music teachers are frequently shared between two or more schools which creates numerous problems for both teacher and student. At the other extreme, some respondents indicated a difficulty in recruiting music teachers with a background in specialties such as instrumentation.

The findings indicate a number of subject/specialty areas of moderate demand. English, library/resources, mathematics and science were placed in this category because of the number of vacancies; few openings but generally consistent over time and among districts. Of the sciences, chemistry, physics and computer studies were in highest demand in large high schools and generalist science teachers for most other situations. It is hard to understand the reasons science was not generally considered to be in great demand, given

the high visibility provided science and mathematics in recent years (Crocker, 1989). The problem may be one of degree. Some educators contend there is an adequate supply of qualified science and mathematics teachers. Others charge there is a shortage of ***high quality*** teachers both currently in the workforce or training to become teachers. In short, while few would profess an imminent shortage of mathematics and science teachers, some maintain there is already a critical shortage of high quality teachers. While the concept of quality is highly subjective, the magnitude of any shortage based on quality is also highly subjective.

Home economics was placed in this category, not because of the number of vacancies since there were few, but because of the difficulty in getting qualified teachers. Some felt the lack of local training programs has contributed to the problem by forcing them to recruit outside the province.

Each of the subject/specialty areas reported in the low demand category has had few vacancies originate anywhere during the last several years. That is not to conclude there have been or will continue to be ***no*** vacancies, although half of all districts reported no vacancies in social studies in the last three years.

Where does the regular classroom teacher fit the equation? It largely depends on the individual school district and its particular philosophy toward teaching. Some reported a demand for specialists and no demand for classroom teachers while others reported demand at the primary and elementary levels. Some are seeking that delicate middle ground between generalist and specialist. To quote one respondent, *"In almost every case we are trying to replace a generalist with a specialist, but one specializing in more than one subject or specialty area."* Whatever the demand for classroom positions, most were being

filled by teachers already employed in the school district. For the most part, school districts have an adequate supply of teachers within their jurisdiction willing to change jobs.

What does the future hold? Of all the demand areas, French immersion and core French will likely continue to be in demand for some years. This is due to a number of factors: (1) the enrolments are continuing to increase and will, in the short-term, continue to create new positions, (2) school districts are experiencing difficulty in getting qualified personnel as the number of applicants, especially in immersion, has dwindled over the years, and (3) as the opportunities in other parts of the country increase, more people will leave. The demand for French teachers will continue to be higher than average. Highly skilled teachers for immersion and core, especially those with the ability to teach other courses, should have little trouble finding employment at least for the next several years.

Although both guidance and music are highly specialized areas, they could quickly drop in demand. As regular special education enrolments near their peek and begin to decline, so will the demand for regular special education teachers. However, higher than average turnover rates will continue to affect hiring in this area.

For the most part, demand in the coming decade will be dependent on teachers leaving - primarily through retirement. There is currently no indication of what types of positions they will be nor where they will be located. It is not enough to wait for replacement positions to occur - many jobs will simply not be replaced. Superintendents will use every opportunity to soften the impact of a contracting workforce by only replacing teachers where necessary and by hiring specialized yet flexible personnel. For this province, the teacher workforce of the 1990s will be characterized by declining demand - demand largely dependent on teacher retirement.

Supply

Teacher supply is a function of the size of the existing workforce and the factors influencing the flow of teachers into and out of it. As little purpose would be served in merely examining the supply of teachers in Newfoundland in aggregate, four groups from which teachers may be drawn at the beginning of each school year are examined. They include: (1) teachers already part of the workforce who are transferred or promoted to new positions, (2) new recruits to the profession who are recent graduates of Memorial University of Newfoundland, (3) certified teachers who previously held positions in other occupations or were unemployed, and (4) teachers who migrate to the province. The relative desirability of teachers from either of these four streams is a function of collective agreements, preferences and policies. Greater insight can be gained by understanding the importance of each as well as the factors determining the size of each.

As the opportunities for teachers to leave the workforce diminish each year, more teachers will seek opportunities for change within the workforce. This group will establish the dominant presence in the 1990s. As more redundancies result more teachers will either seek, or be forced into, transfers. While this may not be the path chosen by the superintendent, it will be the one largely determined through negotiated collective agreements.

The number of new teachers to the profession recruited directly from Memorial University will decline significantly in the next decade. Success in obtaining employment will depend primarily on three criteria; experience, subject/specialty area and academic background. The key ingredient, experience, is frequently the missing link for most university graduates. The period in our history in which *"willingness to serve"*, was often

the only prerequisite to employment is over. Even as recently as the 1980s, teachers could obtain employment in rural areas with relative ease. Now, however, with the workforce contracting and many positions being filled internally, the market is competitive and rural districts are demanding and getting more highly qualified and skilled teachers.

The same factors affecting university graduates will affect certified teachers not in the workforce. While research shows that, especially in times of shortage, there is a large supply of teachers waiting to enter, there is little evidence to support that fact here. Most of the teachers hired from this group were recent graduates and either substituting or actively seeking employment.

The number of new hires from outside the province form a residual. Most from this group have been recruited to teach in specific areas; such as French immersion and home economics.

The number who are teaching or are seeking teaching jobs is influenced by a variety of conditions. Foremost among them are the following:

1. *Job opportunities, compared with opportunities in other professions having comparable salary, status, career opportunities and working conditions.*

2. *Attractiveness of teaching compared with the attractiveness of other employment based on salary, status, career opportunities and working conditions.*

3. *Awareness of teacher demand; more specifically the availability, location, subject/specialty, requirements and expectations of jobs in teaching.*

4. *Satisfaction with current employment status compared with the satisfaction and security of available teaching jobs.*

The attractiveness of teaching is as cryptic as it is complex. Darling-Hammond points out that the nonpecuniary satisfaction of teaching is diminishing and that teaching has lost some of its appeal (1984). While this may or may not be the case here, it is equally likely that changing morals, values and laws, manifested in the classroom through more reporting and documentation by teachers, have contributed to the stripping of some of the lustre.

Measuring the supply of teachers is restricted to estimation. Some understanding of the numbers in the workforce and the teacher training institutions is possible. However, it is difficult to determine the number of qualified teachers not currently in the workforce as demonstrated by Warren (1979). There are three types of individuals in this group; those actively seeking employment, those not seeking employment but who would do so if the opportunity arose, and those who are qualified but no longer interested in teaching as a career. Whatever the mix, the size of this group is substantial.

Recruitment. Some indication of where the supply of teachers came from is discovered through an analysis of the group of teachers recruited to the workforce each year. A detailed breakdown is shown in Table 27. Over the last two decades the total number of recruits has declined significantly, from 2,815 in 1968 to 1,104 in 1985 [the last year for which complete data are available]. Of the total recruits, those coming directly from university declined the most. It should be noted, however, that this group is not only comprised of beginning teachers but also of teachers who had returned to university for upgrading. One of the reasons for the sharp decline between the 1960s and 1980s is that each year more teachers reached their desired or maximum certification; hence, had no need to return to university to upgrade their teaching credentials.

Table 27

Teacher Recruitment by Activity Previous Year, Selected Years.

Year	Teaching		University	Other Activity	Total
	Province	Elsewhere			
1988-89	492				
1987-88	491				
1986-87	572				
1985-86	465	18	278	343	1104
1984-85	464	21	329	355	1169
1983-84[a]	117	17	456	529	1119
1978-79	395	17	362	350	1124
1973-74	707	73	982	213	1975
1968-69	1142	95	1256[b]	322	2815

[a]Reflects the introduction of grade 12.
[b]Includes those recruited from other educational institutions.
Sources: Statistics Canada, *Characteristics of teachers in public elementary and secondary schools*, 81-202. and Newfoundland, Department of Education, *Annual General Return.*

Teacher training. Changing enrolment patterns in teacher training institutions are one of the first indications of the general attractiveness of and satisfaction with the teaching profession. This province is somewhat advantaged [statistically] in that it has only one such institution - Memorial University of Newfoundland.

Table 28 shows how enrolment in the education faculty has changed over the past five years. During this period, the education participation rate, a measure of the number of education students in relation to the total students, has remained relatively constant.

About 11% of the total student population in any given year are enroled in the education faculty. Whether that is a function of the admission policies of the university or of the career aspirations of students or both is undetermined.

Table 28

Full-time Enrolment in First and Second Year Programs and Education Faculty, Memorial University, Selected Years.

	University Enrolment			Education Faculty			
Year	1st yr	2nd yr	Total[a]	Admitted	Total	Education Admission Rate	Education Participation Rate
	c	d	e	f	g	(f/d)*100	(g/e)*100
1987-88	3546	2647	10916	767	1210	29.0	11.1
1986-87	3426	2634	10704	675	1309	25.6	12.2
1985-86	3377	2642	10070	n/a	1072		10.7
1984-85	3172	1299[b]	8919	n/a	1053		11.8
1983-84	1363[b]	2366	7651	n/a	968		12.7
1978-79	1793	1646	5866	n/a	n/a		
1973-74	1497	1547	6048	n/a	n/a		
1968-69	1577	1228	4563	n/a	n/a		

[a] Excludes partial and graduate students.
[b] There were no high school graduates in June, 1983 and this is reflected in the low 1st year enrolment in 1983-84 and 2nd year enrolment in 1984-85.
Source: Office of the Registrar, Memorial University of Newfoundland.

Tables 29a and 29b show several interesting trends. First, the total number of full-time students had increased significantly (135.0%) between 1980 and 1987. Second, the number of students registered part-time was a significant portion of the total enrolment. Third, of the four program areas, science education and music education had made the most significant gains.

Table 30 shows how the number of education degrees awarded had changed since 1968. Most surprising is the fact that there has been little change. With few exceptions, both the number of education degrees and the rate of education degrees in relation to the total degrees, had remained relatively constant; the number between 600 and 800 and the rate between 35% and 45%.

Table 31 provides a breakdown of education degrees by type. The most significant change has been the drop in B.A. (Ed.) degrees awarded due to the decision to eliminate this option. Also noteworthy, are the increase in number of graduate degrees awarded and the increase, at least in the early 1980s, in the number of special education degrees awarded.

Table 29a

Full-time Education Students[a] by Program, Memorial University, 1980-81 to 1987-88

Year	Education	Arts Education	Science Education	Physical Education	Music Education	Total
1987-88[b]	706	291	114	62	37	1210
1986-87	755	297	124	97	36	1309
1985-86	658	245	82	49	38	1072
1984-85	651	230	83	61	28	1053
1983-84	597	206	63	65	37	968
1982-83	488	170	51	50	37	796
1981-82	400	151	40	35	18	644
1980-81	331	125	25	31	3	515

[a]Excludes graduate students.
[b]Preliminary.
Source: Office of the Registrar, Memorial University of Newfoundland.

Table 29b

Part-time Education Students[a] by Program, Memorial University, 1980-81 to 1987-88

Year	Education	Arts Education	Science Education	Physical Education	Music Education	Total
1987-88[b]	599	52	14	11	3	679
1986-87	1080	85	18	11	-	1194
1985-86	1064	58	13	4	1	1140
1984-85	1068	90	5	3	3	1169
1983-84	875	72	13	9	1	970
1982-83	801	108	21	9	2	941
1981-82	827	91	16	11	-	945
1980-81	900	94	19	19	-	1032

[a]Excludes graduate students.
[b]Preliminary.
Source: Office of the Registrar, Memorial University of Newfoundland.

Table 30

Graduation Statistics, Memorial University, Selected Years.

Year	Degrees awarded[a]			Rate of Education Degrees Awarded	Rate of Bachelor Degrees Awarded
	Education	Bachelor	Total		
	b	c	d	d/c*100	d/b*100
1988-89	780	2014	2314	33.7	87.0
1987-88	940	1986	2239	42.0	88.7
1986-87	1050	2281	2554	41.1	89.3
1985-86	860	2082	2305	37.3	90.5
1984-85	824	1934	2108	39.1	91.7
1983-84	655	1655	1864	35.1	88.8
1978-79	691	1479	1673	41.3	88.4
1973-74	880	1741	1946	45.2	89.5
1968-69	658	1482	1612	40.8	91.9

[a]Includes diplomas.
Source: Office of the Registrar, Memorial University of Newfoundland.

Table 31

Education Degrees Awarded by Type, Memorial University, 1984-85 to 1988-89.

Degree	1984-85	1985-86	1986-87	1987-88	1988-89
B.A. (Ed.)	302	248	273	192	57
B.Ed. (High)	283[a]	332	334	278	289
B.Ed. (Elem)		40	98	91	95
B.Ed. (Pri)		25	86	71	77
B. Mus. Ed.	12	9	9	8	10
B.P.E.	46	43	57	36	34
B. Sp. Ed.	46	53	57	106	60
B. Voc. Ed.	27	21	23	32	30
Nat. & North Ed.Dip.	4	4	3	1	-
Sp. Ed. Dip.	10	-	-	-	-
Adult Teach. Ed.Dip.	-	-	-	1	-
Voc. Ed. Dip.	26	18	15	19	28
M. Ed.	68	67	95	105	100
Total	824	860	1050	940	780

[a]General B.Ed. degree.
Source: Office of the Registrar, Memorial University of Newfoundland.

Certification. Another measure of the interest in teaching as a career is the changing number of teaching certificates issued each year. Table 32 shows the number of first-time certificates and the number of upgraded certificates issued. Since 1984 there has been little change with, on average, 1174 certificates issued each year. While a number of upgraded certificates were issued to teachers already in the workforce, no data are available as to the exact number. One can assume, however, that many individuals used part-time studies as a mechanism to raise their certification level.

The number of first-time certificates issued was significantly higher than the number of first-time teachers hired. In 1987-88, for example, there were 120 beginning teachers hired yet over 600 first-time teaching certificates issued. Further, there is no reason to believe all first-time teachers hired in 1987-88 were issued certificates in that same year. A number came from that *stock* of teachers already certified or upgraded.

Table 32

Teaching Certificates Issued, 1984-85 to 1988-89.

Year	First-time Certificate	Upgraded Certificate	Total
1988-89	418	469	887
1987-88	609	584	1193
1986-87	602	615	1217
1985-86	603	538	1141
1984-85	571	572	1143

Summary

As we move toward the year 2000, we will see some significant changes in education. Driven by declining births and out-migration, enrolments will continue on a downward path, perhaps reaching 100,000 or fewer students. As enrolments decline, so will the size of the teacher workforce, and given few withdrawals and fewer acquisitions, the teacher workforce will age rather rapidly.

The consequence of this is that teacher demand will fall significantly for the next seven to nine years, and much of that demand will be filled by teachers returning to new or old positions. Demand for new teachers will be limited by location and area of concentration. While, no doubt, there will be positions filled in all areas of the province and in all subject/specialty areas, significant demand will be limited to those locations and areas where growth and expansion will occur.

Analysis of the supply of new teachers was essentially limited to those coming directly from university - more specifically Memorial University of Newfoundland. Of this group, the number of full-time students enroled in the Faculty of Education has been increasing yet the rate of education degrees awarded has remained relatively constant.

There was no attempt in this study to determine whether or not any labour market imbalances between supply and demand exist in the teaching profession, primarily because there is no reliable information on the magnitude, quality, and availability of the supply of teachers. Labour market imbalances, therefore, are in the domain of speculation.

The current dilemma facing educators is that while enrolments have been declining, new policies leading to increased allocations of teachers are not anticipated, and fewer teachers have been leaving the profession than in any other period of our history. As a result, demand

is reaching toward the nadir. The questions now are: *"How long will it continue on its current path?"; "How far will it drop?";* and *"What areas will be affected the most?"*

V. SHORTAGE OR SURPLUS: What the future holds.

Summary

The 1990s will be characterized as a period of contraction in education. Not only will there be a significant change in the major demographic characteristics of the education system, but much of the population characteristics will change as well. For example, a decline in fertility coupled with a decline in the female population (15-44) will contribute to a continued, albeit small, decline in births. Further, with little change expected in migration the general population is projected to decline. This province is one of the few regions in the world with a declining population. Few regions can afford to lose such a valuable resource as its people for very long without serious consequences.

The education system, characterized by declining enrolments during much of the last twenty years, will continue to decline. Evidence points toward a student population in the province that could reach and, perhaps, drop below 100,000 students.

Barring significant policy changes and having more far reaching consequences, will be a concomitant decline in the teacher workforce. It will be serious, not so much because of the size of the decline, but because of the composition of it. Declining enrolments have exacerbated the problems associated with an aging teacher workforce. In the next decade, the province will lose many of its most experienced teachers and will not be replacing them. As the system contracts (losses exceed gains), expansion demand will become negative. Due to teacher turnover demand for teachers will continue, however, it will be reduced significantly.

The Faculty of Education, Memorial University of Newfoundland produces, and will likely continue to produce, large numbers of teachers. However, as the potential market for university students gradually shrinks (19-25 age group), so will the market for potential teachers. Consequently, the supply of certified teachers will continue to expand even though each year a number of teachers will leave to accept teaching jobs in other parts of Canada and the United States. Given these conditions, the province will continue to produce a surplus of teachers. Exactly how big the surplus will grow is difficult to estimate.

Having said that, it is counterproductive to view teacher supply and demand as a single entity - one that would provide actual measurements to illustrate labour market imbalances. The reasons are numerous, among them:

1. Reliable data on admissions to and, more importantly, composition of students enroled in the education faculty are unavailable.

2. The supply of teachers is troublesome to measure. It is dependent on a number of unknowns such as the number of teachers who would return to teaching if the opportunity presented itself or the number of certified teachers having never taught but would pursue teaching if the opportunity arose.

3. The number of graduates from other faculties who would seek opportunities in education, via the one year degree program, is unknown.

4. Surpluses and shortages are a function of time. One subject area may have a surplus of teachers this year but may have a shortage next year.

5. Surpluses and shortages of teachers can exist at the same time, even within the same district. For example, one school district may have a surplus of core French primary teachers while a neighbouring district may have a shortage of core French primary teachers.

What this study has shown is that there will be a decline in the demand for teachers in almost all areas of education. The likely outcome is a general surplus with a marginal shortage in some areas. To what extent cannot be determined, but it is likely to be severest during the 1990s and continue to a lesser degree in the next century.

There is little evidence to support claims of an imminent shortage in this province. The danger of proclaiming a general shortage based on one or two examples or ill-suited assumptions is that it not only conveys the wrong message but raises false expectations among teachers and prospective teachers about future opportunities in the profession.

Conclusions

The aging of the teacher workforce has grave implications. With an abundance of experienced teachers, we should be moving to a period in our history of great confidence in the education system. There is a sizable generation gap brewing - both between teacher and student and between teacher and teacher. Rather than being exposed to a healthy mix of teachers of all ages and experiences, most students will be exposed to a group of teachers largely in their forties and fifties, roughly three to five times their age. By the same token, the beginning teachers who have recently graduated from university will find themselves teaching with colleagues who are likely to have over twenty years classroom teaching experience.

There are several mechanisms which might be used to cope more adequately with the problem of elderly teachers. For example, some consideration might be given to: (1) increased job sharing, (2) increased responsibility through the design of curricula, (3)increased responsibility through the design of teaching materials, or (4) increased

responsibility in the training of young teachers and interns. In other words, some attempt should be made to involve older teachers in a more decisive role in the education process.

It is critical that school boards establish planning mechanisms, either in the form of professional planners or educators with planning experience, to anticipate and deal effectively with change. Issues need to be addressed while a response is possible. Quantitative measures to questions such as:

1. What are the dynamics of entry, exiting and reentry of teachers?

2. How do these dynamics vary in different communities or schools or in different economic and cultural contexts?

3. What teacher characteristics are actually desired and needed by various school systems?

4. What are the effects of working conditions on teacher mobility and job satisfaction.

The graying of the teacher workforce means that a constant need will exist for strong leadership. Leadership is fundamental if the Province is to develop and maintain a vibrant and dynamic workforce; one that will build strong relationships, share ideas and experiences and nurture its young (teachers). Leadership at all levels, at the Department of Education, among district office personnel, in schools and in classrooms, will be the single most important ingredient for success in education in the 1990s.

Finally, more information is required about all components of the education system - about specific curriculum areas, about the economic implications of contraction, and about available teaching jobs, where they are and who is preparing for them. In that way, the distinction between long-term planning and a better functioning of the market based on more perfect knowledge would be indistinguishable.

BIBLIOGRAPHY

Alberta, Departmant of Education.
1988. *Alberta teacher supply & demand forecast: School years 1988-89 to 1991-92.* Edmonton, Alta: Planning and Policy Secretariat, Alberta Education.

And now, a teacher shortage.
1985, July 22. *Time*, p. 63.

Canadian Teachers' Federation.
1989. *Projections of elementary and secondary enrolment and the teaching force in Canada 1987-88 to 2006-07.* Ottawa, Ont.

Cetron, M., and Davies, O.
1989, October. Future trends: Necessary information for life in the next century. *Omni, 12* (1), 112-118.

Crocker, Robert.
1989. *Towards an achieving society.* Final report of the task force on mathematics and science education. St. John's, NF: Author.

Crocker, Robert, & Riggs, Frank.
1979. *Improving the quality of education: Challenge and opportunity.* Final report of the Task Force on Education. St. John's, NF: Author.

Darling-Hammond, Linda.
1984. *Beyond the Commission Reports: The coming crisis in teaching.* Santa Monica, CA: The Rand Corporation.

Grambs, J.D., and Seefeldt, C.
1977. The graying of America's teachers. *Phi Delta Kappan, 59*, December.

Grambs, J.D.
1980. Implications of declining enrolments for teacher age characteristics and educational development. *The Gerontologist, 20*, 552-560.

House, J.D.
1989. *Going away...and coming back: Economic life and migration in small Canadian communities.* St. John's, NF: Memorial University of Newfoundland, Institute of Social and Economic Research.

Illinois State Board of Education.
1981. *Illinois supply and demand for special education personnel.* Springfield, IL: Department of Planning, Research, and Evaluation.

Illinois State Board of Education.
1983. *The supply and demand for Illinois mathematics and science teachers.* Springfield, IL: Department of Planning, Research, and Evaluation, Research and Statistics Section.

Illinois State Board of Education.
1985. *Illinois teacher supply and demand, 1984-85.* Springfield, IL: Department of Planning, Research, and Evaluation.

Kalbach, W., and McVey, W.
1971. *The demographic bases of Canadian society.* Tononto, ONT: McGraw-Hill Company.

Kasarda, John D.
1971. Economic structure and fertility: A comparative analysis. *Demography, 8* (3), 307-317.

Kasarda, J., Billy, J., & West, K.
1986. *Status enhancement and fertility - reproductive responses to social mobility and educational opportunity.* Orlando, FL: Academic Press, Inc.

Lyon, David.
1975. *How Many Teachers?.* Ontario, Department of Education, Planning and Research Branch.

Mackay-Smith, Anne.
1985, June 20. Student boom makes teachers a prize catch. *The Wall Street Journal*, p. 27.

National Center for Education Statistics.
1987. *State projections to 1993, for public elementary and secondary enrollment, graduates, and teachers.* Leo Eiden (Dir.). Washington, DC: U.S. Government Printing Office.

National Center for Education Statistics.
1988. *Projections of education statistics to 1997-98.* Leo Eiden (Dir.). Washington, DC: U.S. Government Printing Office.

National Center for Education Statistics.
1989. *The condition of education: Elementary and secondary education.* Volume 1. Curtis Baker (Ed.). Washington, DC: U.S. Government Printing Office.

National Education Association (US).
1983. *Teacher supply and demand in public schools, 1981-82.* Washington, DC: Author.

Newfoundland, Department of Education.
1970. *An act respecting the operation of schools and colleges in the Province.* St. John's, NF: Queen's Printer.

Newfoundland, Department of Education.
1986. *Trends in education: Demographic projections, Part I.* H. L. Press. St. John's, NF: Department of Education, Division of Evaluation and Research.

Newfoundland, Department of Education.
1988. *Educational Perspectives, and challenges for the future.* H. L. Press and D. Young (Eds.). St. John's, NF: Department of Education, Division of Evaluation and Research.

Newfoundland, Department of Education.
1990. *Preliminary statistics of education.* Jill Andrews. St. John's, NF: Department of Education, Division of Evaluation and Research.

Newfoundland, Department of Health.
1986. *Report on the Births, marriages and deaths in the Province of Newfoundland.* St. John's, NF: Queen's Printer.

Newfoundland Statistics Agency.
1986. *Population projections Newfoundland and Labrador 1986 - 2006.* St. John's, NF: Executive Council.

Picard, Andre.
1989, February 21. Teacher shortage of 30,000 predicted. *The Globe and Mail*, p. a1-a2.

Press, H. L.
1987. *A study of selected factors associated with the supply of and demand for public school teachers and administartors in the Province of Newfoundland and Labrador*. Unpublished master's thesis, Memorial University of Newfoundland, St. John's.

Smith, Laverne.
1988. *Perspectives on teacher supply and demand in Ontario, 1988-2008*. A research project funded by the Ministry of Education, Ontario. Toronto, Ont: Queen's Printer.

Staple, John.
1989, September. Teacher shortage - fact or fiction? *The Bulletin*. Publication of the Newfoundland Teachers' Association, *33* (1), 6-9.

Stapleton, John, Bulcock, Jeffrey, Clifton, Rodney, & Paschke, Paul.
1978. Teacher demand in Newfoundland and Labrador: The next ten years. *A study conducted for: the Department of Education, Memorial University of Newfoundland, & the Newfoundland Teachers' Association*. St. John's, NF: Authors.

Statistics Canada.
1987. *Characteristics of teachers in public elementary and secondary schools*, (Catalogue No. 81-202). Ottawa: Supply & Services Canada.

Statistics Canada.
1989. *Elementary and secondary school enrolment*, (Catalogue No. 81-210). Ottawa: Supply & Services Canada.

Sullivan, Barry M.
1988. *A legacy for learners*. The report of the royal commission on education. Victoria, BC: Queen's Printer.

U.S. Department of Commerce.
1989. *Statistical abstract of the United States 1989* (109th ed.). Washington, DC: U.S. Government Printing Office.

Warren, P. J.
1979. *A study of unemployed teachers*. St. John's, NF: Memorial University of Newfoundland, Institute for Educational research and Development.

Appendix A

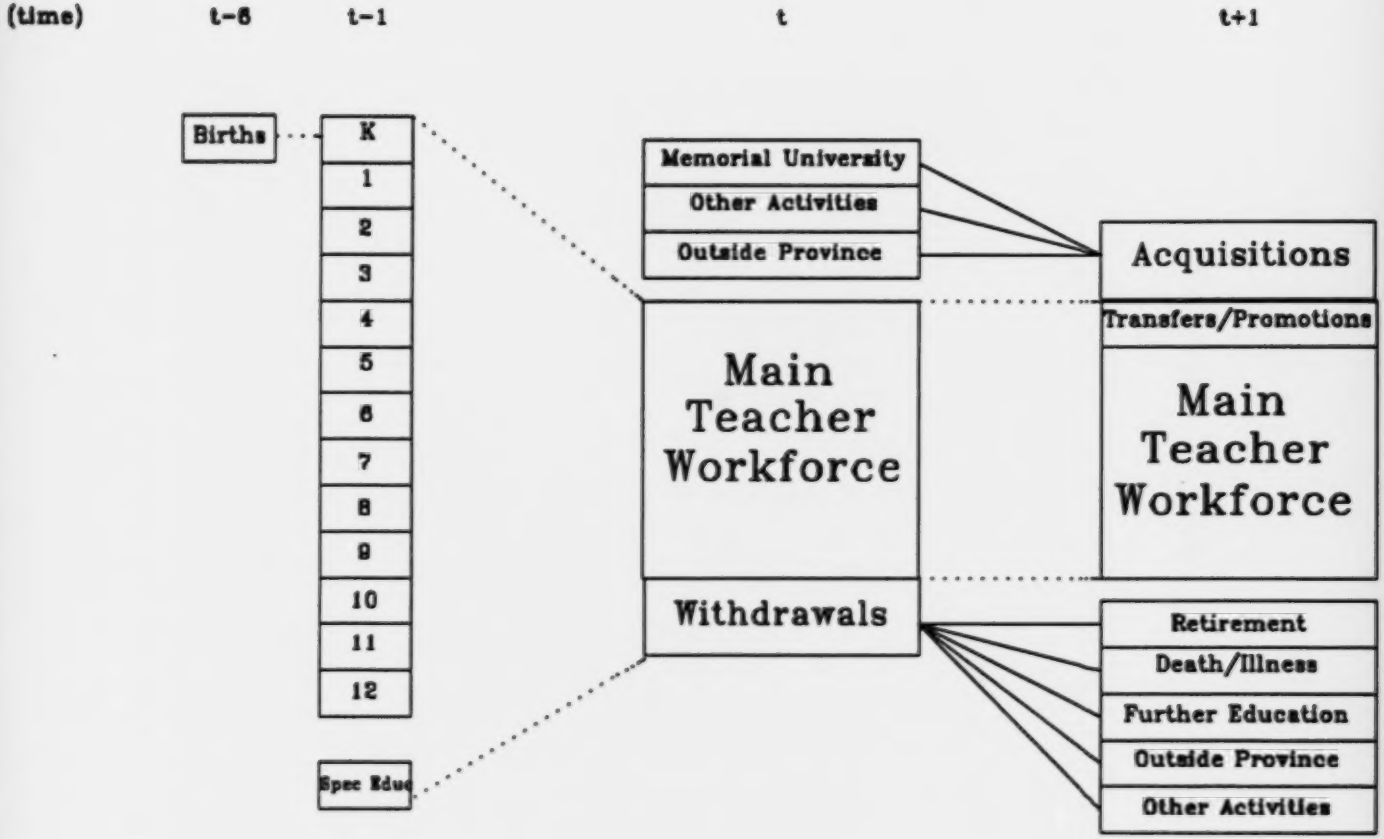
General Methodologies

The conceptional model used for this study consists of several distinct methodologies derived from a number of sources. The primary references were extrapolated from Lyon done for an Ontario setting, Stapleton et al. done for a Newfoundland setting, and the National Center for Education Statistics in Washington as part of an annual education forecast for the United States. As illustrated in Figure 16, the conceptional model consists of a number of discrete components: student enrolments, teacher demand and teacher supply. It is a fairly uncomplicated representation of the variables which affect the supply of teachers and the demand for teachers from year to the next.

The general procedure used in this study was to convert, where possible, the variable to be projected into a rate or ratio of a particular base variable. Once accumulated for a ten year period these rates and ratios, or in some cases actual data, were projected using standard forecasting models (time series) and then reapplied to the base variable. The two time series models used extensively in this study were trend models (linear regression) and smoothing models (exponential smoothing).

Figure 15

Conceptual model of the main variables.



For the most part, three alternative projections were developed - most likely, low and high. Both the low and high alternative projections are based on assumptions involving varying degrees of growth. Therefore, they do not represent a statistical confidence level about the most likely alternative projection, but instead represent a subjective judgement on the upper and lower limits.

Trend models are probably the most commonly used quantitative forecasting techniques and are constructed by fitting various linear and curvilinear trends to past data and extrapolating those trends into the future. Linear trend models are developed by estimating an equation which minimizes the vertical distances of all the points of the data (best fit). Frequently, a linear regression ($y=a+bx$) was applied, however, data did exhibit other relationships such as polynomial regression ($y=a+bx+cx^2+dx^3$), logarithmic regression ($y=a+b \log(x)$), and hyperbolic regression ($y=a+b/x$).

Smoothing models also derive forecasts from analysis of past values. Unlike trend models, they incorporate a variety of smoothing techniques that are intended to uncover underlying patterns by eliminating random fluctuations in the past values of the dependent variable (Y). They achieve this by placing more weight on recent observations than on earlier ones. The weights for observations decrease exponentially as one moves further into the past. As a result, the older the data, the less their influence on projections. The rate at which the weights of older observations decrease is determined by the smoothing constant selected. This is achieved by minimizing the error values: MSE (mean squared error) and MAPE (mean absolute percentage error).

Neither of these models is without its limitations. It is assumed in both, for example, that the passage of time is the underlying cause of variation in the dependent

variable. Admittedly, there are other variables, such as the state of the economy, the cost of living, the political climate, or the state of technology which can influence the dependent variable. If sufficient data were available on these and other variables then associative models could be undertaken. These models incorporate multiple regression techniques in an effort to isolate and quantify those factors other than time, that influence the dependent variable.

The individual methodologies used in the conceptional model are described below under the headings *Enrolment* and *Personnel.*

Enrolment

Births and Kindergarten participation rates, defined as the survival rate from birth to Kindergarten entry, were projected using available information and assumptions about fertility, mortality and migration.

Enrolments were then projected for students in grades 1 - 12 inclusive and in special education programs. Grade specific survival rates were computed for each of the previous ten years. The rates were calculated as follows:

(A1) $S_{g,g+1}=(E_{(g+1)(t+1)})/E_{gt}*100$ where,

t =Subscript denoting year
g =Subscript denoting grade
E_{gt} =Enrolment in grade g, year t
$S_{g,g+1}$ =Survival rate from grade g to grade g+1

Based on past trends, related information and assumptions about future conditions, the rates were then projected using various least-squares regressions. While the actual data may have oscillated from grade to grade or from year to year, for the most part the

rates surrounding the data maintained linearity.

Assumptions about specific programs such as special education and French immersion were developed using available data and knowledged supplied from those directly involved and those in a position to influence policy.

Prior to the 1989-90 school year, data on special education students had been collected and summarized by grade. However, since that year data has been collected by age and, consequently, historical data had to be estimated in order to provide long-term trends. Therefore, data on special education programs were projected using two groups; those aged 5-12 (roughly corresponding to the elementary grades) and those aged 13 and over (roughly corresponding to the secondary grades). Enrolments for these programs were then estimated and applied to the summarized data.

School district enrolments were then projected. Rates for individual school districts were computed over time and then projected incorporating assumptions about future migration patterns, economic growth and development, and potential regional population growth.

Personnel

Personnel projections were derived from projected enrolments, teacher allocation formulas and assumptions about future allocation policies. Projections were computed at a school district level utilizing, and revising where necessary, allocation formulas to reflect individual differences. Although existing formulas are based on individual school enrolments, a number of changes were made to integrate total school district enrolments. Various assumptions were developed to permit the development of low and high

scenarios. District projections were than summarized to provide provincial totals.

Historical data on the number of teachers who withdraw from the system, either temporarily or permanently, are summarized from data available from the Annual General return. From that a withdrawal rate is computed as a percentage of the total teacher workforce for the previous year. It is written as:

(A2) $WR_t=W_t/TW_{t-1}*100$ where,

W_t =Withdrawals in year t

The demand for teachers can be viewed as the total positions filled by teachers not currently in the workforce. This is predicated on the assumption that the number of hirings equals the number of vacancies. The number of acquisitions to and withdrawals from the teacher workforce accounts for the difference in size of the workforce from one year to the next. The formula for measuring acquisitions can be written as follows:

(A3) $A_t=TW_t-TW_{t-1}+W_{t-1}$ where,

A_t =Acquisitions in year t
W_{t-1} =Withdrawals from previous year (t-1)

It should be noted that acquisitions are not synonymous with demand since they ignore much of the dynamic nature of the workforce. Demand is a function not only of acquisitions but also of the vacancies filled from within the workforce (transfers and promotions). However, as noted earlier in the study, the data available on the number of vacancies filled from within the workforce, either within districts or between districts, is not reliable and would provide a somewhat confusing, if not erroneous, picture of demand.

Information related to the demand for teachers in specific subject and specialty areas and in different regions of the province were obtained from two sources: (1) a 1987 thesis reporting the results of a survey of school districts on the teacher and administrator vacancies which were filled during the year 1985-86 (Press); and (2) a similar investigation for years 1987-88 and 1988-89 by the Department of Education. In the later instance opinions were sought from school district personnel about the problems associated with the hiring of new personnel, the condition of teacher supply and demand, and their general satisfaction with the quantity and quality of applicants received. These data were then integrated with the demand projections and retirement information to generate a picture of teacher demand for the previous three years. Assumptions were then made concerning teacher retirement and workforce contraction to produce a number of forecasts of the demand for teachers in various subject and specialty areas and in regions of the province.

Appendix B

Survey Instruments

JOB ACCESS

1985-1986

This questionnaire is designed to focus on the demand for various teaching and administrative positions and the attributes of those who were successful in filling those positions for the school year 1985-1986. It is not meant as a qualitative assessment of the selection process. Most responses will require a simple check (✓).

Please complete one questionnaire for each permanent and long-term replacement position. Do not complete forms for any position filled for a period of less than one year.

1. Job Title: _____

2. School District: _____

3. School Name: _____

4. Address of School: _____

_____

PART I: BACKGROUND

5. Is this a new position? YES ☐ NO ☐

If yes, briefly outline the reasons for creating this position and then proceed to PART II. _____

_____

_____

If no, how long has this position been vacant? Months ☐☐

6. Indicate if previous employee has:

a.	left permanently	( )
b.	taken a temporary leave of absence	( )
c.	been granted long-term sick leave	( )
d.	other (specify) _____	( )

7. If permanent, indicate reason.

a.	Redundancy	( )
b.	Dismissal by employer	( )
c.	Reassignment by employer	( )
d.	Resignation by employee	( )
e.	Retirement	( )
f.	Death	( )
g.	Other (specify) _____	( )

8. What is the status of this position?

a.	Full-time	( )
b.	Half-time	( )
c.	Other (explain) _____	( )

PART II: DESCRIPTION

9. What is the primary responsibility of this position?

a. Teaching (complete A) ( )
b. Administration (complete B) ( )
c. Administration & teaching (complete A,B,C) ( )

A. TEACHING

10. To which level has this position primarily been assigned?

a. Primary (K - 3) ( )
b. Elementary (4 - 6) ( )
c. Junior High (7 - 9) ( )
d. Senior High (10 - 12) ( )

11. In which language will this position be working?

a. English ( )
b. French ( )

12. To which academic or specialist area(s) is this position assigned? If possible indicate one area only. Otherwise, indicate those areas which were advertized.

1. Classroom assignment ( )
2. Generalist area ( )
3. Subject teaching:
   a. Art ( )
   b. Business Education ( )
   c. Drama/Theatre ( )
   d. English/Literature ( )
   e. Family Studies ( )
   f. French (subject) ( )
   g. Guidance ( )
   h. Home Economics ( )
   i. Industrial Education ( )
   j. Library/Resources ( )
   k. Mathematics ( )
   l. Music ( )
   m. Physical Education ( )
   n. Religious Education ( )
   Science:
   o. Biology ( )
   p. Chemistry ( )
   q. Computer Studies ( )
   r. Earth Science ( )
   s. Environmental Science ( )
   t. Physics ( )
   u. Social Studies ( )
4. Special Skills/Programs:
   a. Special Education ( )
   b. Educational Psychology ( )
   c. Educational Therapy ( )
   d. Hearing Impaired ( )
   e. Physically Handicapped ( )
   f. Speech Therapy ( )
   g. Visual Impaired ( )
5. Other (specify) _____ ( )

B. ADMINISTRATION

13. What is the nature of this assignment?

a. Department Head	( )
b. Vice Principal	( )
c. Principal	( )
d. Program Coordinator	( )
e. Assistant Superintendent	( )
f. Superintendent	( )
g. Other (specify) _____	( )

C. ADMIN/TEACHING

14. Indicate the percentage of time assigned to:

a. Administration	☐☐ %
b. Teaching	☐☐ %

PART III: ANALYSIS

15. Was a candidate chosen for this job? YES ☐ NO ☐

16. How many people applied for this position? ☐☐☐

Would you have preferred to have had more? YES ☐ NO ☐

17. How many candidates were interviewed for this position? ☐☐

When answering the following questions, please keep in mind the candidates who were interviewed for the job. On a a scale of 1 to 5, CIRCLE the number which represents your general satisfaction with each of the following.

		Dissatisfied				Satisfied
18.	Their academic qualifications	1	2	3	4	5
19.	Their years teaching experience	1	2	3	4	5
20.	Their administrative experience (if required)	1	2	3	4	5
21.	Their written applications submitted	1	2	3	4	5
22.	Their interviews	1	2	3	4	5
23.	Their references supplied (written or oral)	1	2	3	4	5

PART IV: CHARACTERISTICS

The following questions apply to the candidate chosen for this job.

24. Age at the time of hiring? ☐☐

25. Sex?

a. Female ( )
b. Male ( )

26. Residence at the time of hiring?

a. Newfoundland ( )
b. Other Canadian province ( )
c. Other (specify) _____ ( )

27. Highest degree held at the time of hiring?

a. No degree ( )
b. Bachelor's ( )
c. Master's ( )
d. Doctorate ( )

28. Teaching certificate held at the time of hiring?

I	II	III	IV	V	VI	VII	Other
☐	☐	☐	☐	☐	☐	☐	_____

29. Years educational experience at the time of hiring? ☐☐

30. Indicate the major activity engaged in by the employee immediately prior to this job.

a. Unemployed ( )
b. Attending university (MUN) ( )
c. Attending university (elsewhere) ( )
d. Teaching/administration (same district) ( )
e. Teaching/administration (Province) ( )
f. Teaching/administration (elsewhere) ( )
g. Other (specify) _____ ( )

Please return all completed forms to:

Harold Press
Department of Education
Confederation Building, West Block
Box 4750
St. John's, Newfoundland
A1C 5T7

DISTRICT NO: _____ **TEACHER HIRINGS**

Only permanent jobs filled for a period of at least 1 year (full-time or part-time).

1. How many vacancies had to be filled during the year Oct/88 and Sept/89? _____

2. Has this figure changed from the previous year?

   Increased _____ By how much? _____
   Decreased _____ By how much? _____
   Same _____

3. How many of these vacancies were.....

   existing positions _____
   new positions _____

4. How many were.....

   School Board Positions _____ (Sup,Asst Sup,Pgm Coor,Specialists such as ET)
   Principal/Vice Principal _____
   Teacher _____
   Other _____

5. How many were.....

   Primary (K-3) _____
   Elementary (4-6) _____
   Junior High (7-9) _____
   Senior High (10-12) _____

6. What subject areas/specialties are in greatest demand (e.g. Music, French, Guidance, TMH, Science)? If Science, specify.

Subject Area/Specialty	No. of Hirings
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

7. Could you identify any subject areas/specialties in which you haven't had hirings in the past three years?

Subject Area/Specialty

_____
_____
_____
_____
_____
_____

8. (a) Did you feel you had a choice of good candidates for most jobs in your board?

Yes ____
No ____

(b) Identify those areas in which you were limited in your choice of candidates.

_____
_____
_____
_____
_____

9. Are there any current vacancies for this year?

Yes ____
No ____

10. If yes to question 9.....

(a) How many? _____

(b) In what subject areas?

(c) Why are there vacancies?